# REVIEW OF THE FEDERAL AVIATION ACT

## (Air Traffic Control and Airspace Management)

# HEARINGS

BEFORE THE

## AVIATION SUBCOMMITTEE

OF THE

## COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE UNITED STATES SENATE

EIGHTY-SIXTH CONGRESS

SECOND SESSION

ON

REVIEW OF THE FEDERAL AVIATION ACT

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**Part I: Review of the Federal Aviation Act (Air Safety), 86th Congress**

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# CONTENTS

Statement of—

Becker, William B., director of operations and engineering, Air Transport Association of America, 1000 Connecticut Avenue NW., Washington, D.C. (accompanied by Walter Jensen, director of operations, air navigation and traffic control; Stanley Seltzer, associate assistant director of air navigation traffic) ..... Page 696

Freeman, Samuel, vice president (airspace), National Aviation Trades Association, 1346 Connecticut Avenue NW., Washington, D.C. (accompanied by Robert Monroe) ..... 736

Hartranft, Joseph B., president, Aircraft Owners & Pilots Association, 4650 East-West Highway, Bethesda, Md. (accompanied by Victor Kayne, R. G. Armstrong, and Max Karant) ..... 669, 744

Lawton, William K., executive director, National Business Aircraft Association, Inc., Pennsylvania Building, Washington, D.C. (accompanied by Richard W. Groux, assistant to the executive director, National Business Aircraft Association, Inc.) ..... 665, 765

McDermott, Francis M., executive director, Air Traffic Control Association, 910 17th Street NW., Washington, D.C. (accompanied by Howard Graham, traffic control center, Washington National Airport; Lonnie Parrish, chairman, Washington chapter, Air Traffic Control Association; John Flaherty, air traffic control tower, Washington National Airport; and Les Woodall, air traffic control tower, Washington National Airport) ..... 641

Quesada, Hon. E. R., Administrator, Federal Aviation Agency, Washington, D.C. (accompanied by James T. Pyle, Deputy Administrator, FAA; Daggett H. Howard, General Counsel, FAA; and David D. Thomas, Director, Bureau of Air Traffic Management, FAA) ..... 579, 715

Taylor, Philip B., Assistant Secretary of the Air Force/Materiel, Department of Defense, Washington, D.C. (accompanied by John B. Macauley, Deputy Director of Research and Development, Department of Defense, the Deputy Chairman; Edward A. Bacon, Deputy Assistant Secretary of the Army for Financial Management; Rear Adm. C. S. Cooper, Assistant Chief of Naval Operations for Air; and Maj. Gen. M. A. Preston, Director of Operations, U.S. Air Force) ..... 629

# REVIEW OF THE FEDERAL AVIATION ACT

MONDAY, JANUARY 25, 1960

U.S. SENATE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
SUBCOMMITTEE ON AVIATION,
*Washington, D.C.*

The subcommittee was called to order at 10:47 a.m., in room 5110, New Senate Office Building, Hon. A. S. Mike Monroney presiding.

Senator MONRONEY. The Subcommittee on Aviation will resume its hearings.

This morning we will direct attention to the second phase of these hearings, which are designed principally to review the functioning of the various agencies of the Government under the Federal Aviation Act of 1958. This phase concerns Air Traffic Control and Airspace Management. Of course it ties very directly into the overall question of air safety to which we have devoted so much time already.

Under the act we gave full authority to the Administrator of the Federal Aviation Act to prescribe traffic flight rules and other rules regarding flight operations of both civil and military aircraft.

We are pleased to have with us the Administrator, Mr. Quesada, together with his associate, Mr. David Thomas, Director, Bureau of Air Traffic Management, for the purpose of giving us a report on this general subject.

General Quesada, we are happy to have you back again. We are glad to do so. We are making our presentation on that subject. specialist in this field, as well as your General Counsel, here today.

## STATEMENT OF E. R. QUESADA, ADMINISTRATOR, FEDERAL AVIATION AGENCY; ACCOMPANIED BY JAMES T. PYLE, DEPUTY ADMINISTRATOR, FEDERAL AVIATION AGENCY; DAGGETT H. HOWARD, GENERAL COUNSEL, FEDERAL AVIATION AGENCY; AND DAVID D. THOMAS, DIRECTOR OF THE BUREAU OF AIR TRAFFIC MANAGEMENT, FEDERAL AVIATION AGENCY

Mr. QUESADA. Mr. Chairman, we are again grateful for the opportunity of appearing before your committee and, as per your schedule, we are confining ourselves today to the problem of air traffic control. Of course, if the committee wishes to go outside that area, we will be glad to do so. We are making our presentation on that subject.

I have Mr. David Thomas here, who is the Chief of the Bureau of Air Traffic Management. He will make the presentation.

Senator MONRONEY. One of the very important allied features of air traffic control, of course, is airspace management, in which I

NOTE.—Staff counsel assigned to this hearing, Robert T. Murphy and William T. Beeks.

think you have achieved many outstanding gains already in the first year. Will he testify today on that, or does Mr. Thomas wish to come back and give a report to the committee on how we are opening up additional airways and opening up airspace that formerly was under heavy reservation for military maneuvers?

Mr. QUESADA. We had in mind, sir, that this would be a separate subject. We would prefer to treat it as such. However, as you have so clearly pointed out, these two things are related. So he will have to touch on the subject. But as a report specifically on what we have done, I have to say honestly, Senator, that we are not prepared at this moment.

Senator MONRONEY. Why don't we do it this way: Proceed with your statement on air traffic control and then be prepared to come back as we get further into the hearings with a statement on airspace management. As for other witnesses, I would like to encourage them at this time, if they have data on both subjects, to present it. In this way we can shorten the time and not require so many people who are so busy, engaged in air safety at the moment, to be absent from their posts of duty.

Mr. QUESADA. That will be very satisfactory so far as we are concerned.

Senator MONRONEY. Mr. Thomas, we are glad to have you, sir.

Mr. THOMAS. Thank you, Mr. Chairman.

Senator MONRONEY. The air traffic controllers are all in your department, are they not?

Mr. THOMAS. Yes, sir.

Senator MONRONEY. We have had many fine words of praise during the first part of the hearings for these dedicated, efficient, and thoughtful public servants. They have developed probably one of the highest esprit de corps of any group of Government employees it has ever been my privilege to observe. We congratulate you on the morale and dedication of those who work under you. I believe the testimony earlier was that fully 50 percent of the personnel in FAA are involved in this very vital part of air safety.

Mr. THOMAS. Thank you, Mr. Chairman. We certainly appreciate the warm compliments, and I know the Administrator has already expressed his appreciation for them. I would like to echo it, if I may.

I have a prepared statement. To save time, I will read it.

Senator MONRONEY. I appreciate that. We will not question you until after you have completed your statement.

Mr. THOMAS. Thank you, sir.

First I would like to deal with the scope of the air traffic management activities.

In 1959 the Federal Aviation Agency operated a system comprised of 222 airport control towers, 35 air route traffic control centers, 31 radar air traffic control facilities at military bases, and 351 national and international air traffic communications stations, manned by 16,500 controller and communications personnel.

In terms of services, this system in 1959 controlled a daily average of 73,458 landings and takeoffs—or one per second; 25,884 instrument-type flights—one every 3 seconds; and 3,000 instrument approaches—2 per minute. The system was responsible for the safety of over 139,000 passengers daily in the domestic United States.

To give you a further idea of the volume of air traffic handled, there were 19 airports in 1959 which had a peak day with more than 1,000 landings and takeoffs, and one airport—Chicago-Midway—averaged an operation per minute around the clock. Forty-seven airports had more than 100 landings and takeoffs during their peak hour in 1959.

In order to meet the increasing demand for air traffic services in 1959, FAA took many steps to improve the safety and capacity of the air traffic control system. I shall outline the most significant of these.

2. Air carrier turbojet advisory service: During 1959, the Bureau of Air Traffic Management continued and greatly expanded the air carrier jet radar advisory service program begun in October 1958 with the advent of the air carrier turbojet operations in the United States.

Through this program, FAA controllers located at FAA facilities and USAF air defense radar sites follow by radar each air carrier turbojet flight, advise the pilot of traffic observed on the radar scopes, and "steer" the civil jet around traffic which appears to constitute a potential conflict.

The service is provided between the altitudes of 24,000 and 39,000 feet on more than 25,000 miles of jet routes. Aircraft other than air carriers desiring to fly within 20 miles of these routes and within these altitudes are required to have an operating radar beacon transponder to reinforce radar targets on ground radarscopes. If such aircraft are not equipped with a radar beacon, they must obtain special approval prior to entering this airspace.

Thirty-eight air defense and 11 FAA long-range radars are now being used. In certain limited areas where radar coverage is lacking, positive control service is provided by procedural means, and civil jets are restricted to the altitudes of 27,000 feet to 31,000 feet.

The air carrier turbojet advisory program was instituted to provide protection to the large new civil jets whose speed and operating altitudes makes the "see and be seen" concept of operation an uncertain proposition. Although it is an interim program, it is being expanded as more air carrier jets go into operation on new routes, in order to enhance safety from collision until the capability of the air traffic control system can be built up to provide positive separation to all operations at high altitude without unduly restricting the movement of traffic.

Senator MONRONEY. I don't mean to interrupt you, but I think this is probably one of the greatest forward steps that we have made during the last year, and it should not go unnoticed—that is, these 38 air defense long-range radar. This was a part of our warning network. It was heretofore used exclusively for trying to detect approach of enemy planes; was it not?

Mr. THOMAS. Yes, sir; that is correct.

Senator MONRONEY. Because of the coordination possible under the FAA Act and under the powers of the Administrator, you were able, through cooperation with the military, to use radar already installed, and probably saved millions upon millions of dollars in providing a joint function of the radar that once was there only to try to detect the approach of enemy planes.

Mr. THOMAS. This is correct, sir. This program could not have operated without the use of the military radar facilities which were made available. I do have a chart showing those, and the routes, if it would be of interest.

Senator MONRONEY. We will probably get into that later.

I do think it shows that we are trying in this process to make available not only the equipment where joint use can be justified, but also systems research and everything else and pull it together in a common pool of knowledge which will help all aviation, both military and civil.

Mr. THOMAS. Yes, sir; that was certainly the case here. I think it has been an outstanding example of the cooperation between the military services and the FAA.

Senator MONRONEY. And had the FAA determined to go ahead and buy its own long-range radar to monitor these new high altitudes, it would have been probably 2 or 3 years and some tens of millions of dollars spent before they would have been available; is that correct?

Mr. THOMAS. That is correct.

Mr. QUESADA. If I may interject, for a moment, Senator: I think the Agency should express its profound gratitude to the Military Establishment for permitting this to take place. We are indebted beyond our ability to express it.

Senator MONRONEY. I think that is quite proper. As I understand it, these military long-range radar, early warning radar, are now being manned by joint civilian and military personnel and they are able to work together in harmony and under the same system; is that correct?

Mr. QUESADA. Yes, sir.

Mr. THOMAS. Now, third, I would like to deal with the visual flight rule (VFR) radar advisory service.

Visual flight rule radar advisory service is a new service designed to improve the safety of aircraft operating in "see and be seen" conditions in the vicinity of busy airports. It is accomplished by the controller in the airport tower monitoring traffic on his radarscope and advising each pilot by radio of other aircraft which may constitute a collision hazard to him.

A successful evaluation of this service, conducted on a test basis in the Indianapolis terminal area in 1959, resulted in plans to install the service in three major terminal areas early this year, and the program wil be expanded as resources permit. There are presently 48 airport surveillance radar systems in operation, with more being installed as authorized by Congress, and it is expected that this program will enable FAA to utilize the capabilities of many of these systems for improving the safety of VFR operations as well as of the IFR operations, or those under instruments, for which they were primarily intended.

4. Military air-to-air refueling: One of the most far-reaching of 1959 accomplishments in the air traffic management area of responsibility of FAA was the organizing of the air-to-air refueling activities of the military services. Previously, these operations were conducted on an individual basis, without prior notice, and sometimes on or across high-density routes.

Prior to last year, high altitude air-to-air refueling operations were accomplished in some 68 areas established by the Strategic and Tactical Air Commands in the domestic United States. In addition, unscheduled refueling was also accomplished randomly elsewhere by both the Air Force and the Navy. The 68 areas and the random refueling were afforded no special air traffic control consideration, since the majority of the refueling operations were conducted under visual flight rules.

Due to increased refueling activity and the high performance of the aircraft involved, the establishment of specially designated airspace and new procedures was required to improve the safety aspects of this operation and at the same time impose minimum restrictions on other operations traversing the areas.

In January 1959, procedures to be employed in the establishment of refueling areas above 24,000 feet for the Strategic Air Command and the Tactical Air Command were developed and issued to FAA field facilities. These procedures were subsequently amended to include all of the military services having a requirement for high altitude air-to-air refueling.

As a result of this program, the number of refueling areas has now been reduced to 25. These 25 areas have been carefully selected, designated, and publicized extensively for the aviation industry. Area boundaries, points of ingress and egress, altitudes, and time schedule of usage are regularly listed in the Airman's Guide and, in addition, traffic information important to a pilot traversing the area in accordance with visual flight rules is provided by air traffic control facilities at regular intervals or when specifically contacted. Aircraft operating under IFR are afforded standard separation with regard to these areas; that is, above, below, or around the area. Where radar coverage exists, standard radar separation between refueling mission aircraft and traversing IFR aircraft may be provided.

In August 1959, action was started to establish similar areas for refueling operations conducted below 24,000 feet. The military services are presently preparing their requirements for refueling areas in these strata, to enable establishment of the same concept employed for high-altitude refueling.

To further improve safety in refueling areas, a new rule has been issued giving right-of-way to aircraft towing or refueling other aircraft, effective on February 15, 1960.

We feel that organizing refueling operations to the extent possible will greatly improve safety from collision for these operations and for other aircraft desiring to traverse these areas.

5. Restricted area climb corridors: With the advent of Century series interceptor aircraft, the Federal Aviation Agency and the U.S. Air Force became concerned over the operating techniques to be employed by these aircraft and their performance characteristics as related to air safety. It was agreed that the great speeds and steep climb attitude attained by these aircraft precluded effective separation from other aircraft by visual means. Further, by the nature of their mission, air defense aircraft which are on alert most often depart or "scramble" without sufficient notice to enable controllers to insure a clear path for them, virtually eliminating effective use of normal techniques for separation.

It was therefore necessary to establish new safeguards for these operations, and the "restricted area climb corridor" is one of these safeguards. Corridors are established through designation of restricted airspace in the form of a corridor limited to specific upper and lower altitudes, and of sufficient width to contain the interceptor departure track.

At the present time, there are 16 climb corridors—15 in the domestic United States, 1 in Alaska—representing approximately one-third of the total number to be established. The extact total and location are dependent on the USAF program for equipping air defense units with Century series aircraft. The corridors are depicted on aeronautical charts, and are listed by location, controlling agency, and radiofrequency in the Airman's Guide.

Operation by aircraft other than air defense interceptors in restricted area climb corridors is permitted, provided clearance is obtained from the facility exercising control of the corridor. The impact of the climb corridors on other operations appears to be negligible, and the gain in air safety is indisputable.

6. Collision prevention devices: Although we are now largely dependent on a ground system to provide air traffic control services, we are also investigating the feasibility of collision avoidance by means of equipment installed in aircraft.

The area of self-contained airborne collision prevention devices has been subdivided into three major segments: aircraft conspicuity, proximity warning indicator (PWI), and collision avoidance systems (CAS).

Senator COTTON. May I ask a question?

Senator MONRONEY. Yes, sir.

Senator COTTON. I notice by reading ahead a little bit, I don't find where you explain those terms to a layman. Will you do it later or now?

Mr. THOMAS. I think it would be better now, if I may.

Very simply, aircraft conspicuity is making the airplane as visible as we can, through paints, lights, contrast, any way we can make it stand out against its background. Principally painting and lighting.

Proximity warning indicator would be any device which would alert a pilot or inform him of the presence of another aircraft in his vicinity, but would not indicate any course of action for him to take. Just simply tell him it is there.

Senator COTTON. Such as?

Mr. THOMAS. Such as an aircraft 5 miles off to your left.

Senator COTTON. I beg your pardon.

Mr. THOMAS. You might tell him just as there is an aircraft 5 miles off to your left, heading your way.

Senator COTTON. Such as what instrument?

Mr. THOMAS. None, sir. His eyes, or airborne radar; we are very deficient in instruments in this field.

Senator COTTON. You say proximity warning indicator. That sounds to me as though it referred to some kind of mechanism. You are just talking about——

Mr. THOMAS. The idea right now. We are hoping and seeking to find some instruments that will do these things. The collision avoidance system would be some instrument like a proximity warning indi-

cator, if we had one, which not only would notify of other aircraft intruding, but would indicate some course of action to take, or perhaps, through automatic controls, take the course of action.

We try to build up in three steps: (1) Is to make the aircraft more visible, (2) is to let the pilot be informed of the presence of other aircraft, and (3) indicate a course of action he might take.

Senator COTTON. Now, if I may ask one more question:

Referring to No. 3, collision-avoidance systems, in the absence of, or pending the perfection of instruments, such as you have mentioned, are you laying down suggestions, rules of conduct, as to what a pilot shall do when he becomes aware of approaching aircraft or aircraft within his position which could be dangerous, or are you leaving that entirely to the individual judgment of the pilot?

Mr. THOMAS. Sir, there are now, and have been for a great period of time, right-of-way rules or rules of the road, such as exist in maritime, as to who has the right-of-way.

Senator COTTON. In other words, when all three lights show ahead, you do something?

Mr. THOMAS. Yes, sir. There are existing rules. The problem here is when the aircraft is not seen for any reason. What we are trying to do is increase the possibility of seeing other aircraft or being aware of their presence.

Senator COTTON. In other words, your normal air safety traffic rules separate traffic going in opposite directions. One will be flying at one altitude and another at a higher altitude?

Mr. THOMAS. Yes, sir.

Senator COTTON. One will be flying on the right side of a road beam, and the other on the left side. Even though you would have altitude separation you would have directional separation. You now provide underpasses and overpasses for intersecting airlanes, and also for military traffic in their claim outs they have their tunnels to come out of to avoid the airways.

But in spite of this, you are looking beyond, to where someone intrudes going the wrong way down a one-way street, and these are the warning devices you are trying to perfect now.

Mr. THOMAS. Yes; sir; and we also have climbing and descending aircraft even though we have altitude separation in level flight.

Senator COTTON. Nos. 2 and 3, then, in order that I may be clear, are more projects and hope for the future than actual activities at the present time. In other words at the present time and through the past you have had rules, continuing rules about pilots being alert and exercising every visual advantage they have, and rules of rights-of-way and so forth, to oversimplify it, but you are seeking mechanical and artificial assistance in those two fields; is that a correct statement?

Mr. QUESADA. Let's refer to proximity warning indicator.

The radar coverage in which we give advisory service, and to which Mr. Thomas has referred, is in effect a proximity warning indicator. As an example, a controller at an air defense radar equipment will say to the pilot, "There is a target 11 o'clock, 20 miles." This is a proximity warning indicator that is in effect on the ground.

We are searching for means and ways of having this proximity warning indicator in the airplane as well. In the last case that I have cited, this is a project under development.

Senator COTTON. You mean the collision-avoidance system?

Mr. QUESADA. Airborne proximity warning indicator. This only gives a warning. It says look out, there is a target at 11 o'clock, 20 miles.

The collision-avoidance system would be a device that would be in the aircraft and would tell the pilot that at 11 o'clock another aircraft is on a collision course. This is an important exacting device. This will say this aircraft is on a collision course, and it would not bring the pilot's attention to an airplane that is 10,000 feet below and not on collision course.

That is the distinction.

Senator MONRONEY. Isn't that your trouble with infrared today—that you can't have altitude separation. You get warnings in the cockpit that actually are not real warnings because it will pick up any degree of combustion and indicate where it is.

Mr. QUESADA. It wouldn't be a collision-avoidance device unless it could compute, unless it could determine, that this airplane, by virtue of its past behavior, and this airplane by virtue of its past behavior, if they continue in the future as they have in the past, will collide.

Senator COTTON. One more question.

These two mechanisms or devices that you have mentioned, are they still in the hope stage or in the process of development?

Mr. QUESADA. They are in the process of development, but I must say very frankly a collision-avoidance device, a device that can say that this airplane and this airplane are on a collision course, our hope of success is very, very dim. This has been looked at for years. Many hundreds of various processes and devices have been examined. I would be misleading the committee if I indicated that we had any hope, any reasonable hope, for a particular device providing us with what we need.

Senator COTTON. But the indicator that would be within the plane and show the approach of another plane is not so far off?

Mr. QUESADA. This is relatively simple, to say that an airplane is within 5 miles of you. This would be easy to do right today. But it would also be responding unnecessarily, because in a terminal area there would be many airplanes within 5 miles of you. So its utility would be almost nil. It might do as much harm as good.

Senator COTTON. In other words, you can't take this indicator from the ground and put it in the plane until you find some way of discrimination?

Mr. QUESADA. This is our problem. That is right.

Senator COTTON. And that, too, has no hope of being very immediate?

Mr. QUESADA. Of course you have the weight limitation and the devices we have on the ground to track airplanes, and then the controller computes in his mind if these are going to collide. We are developing means, with reasonable success, so this can be done by the application of automation. But to put this in the airplane I have to say very frankly we have little hope of success.

Senator COTTON. Thank you.

Senator MONRONEY. On this aircraft conspicuity, you are going to have weather radar on all airliners after January 1961. Would trans-

ponders which enable this to show up on other aircraft, enable it to show up on radar? I know it wouldn't today, but if you have transponders of a certain type on them, would it enable the pilot to see ahead through fog or overcast or greater distances the presence of an aircraft as he scans the weather for thunderheads and things of that kind?

Mr. QUESADA. This would be extremely difficult. All airborne devices are a product of compromise. You can have a large antenna the size of this room and see a very small target very far away. But if you develop, as an example, a small antenna capable of being a part of the aircraft equipment, you can then only see big things, such as a thunderstorm. To get a small antenna, say a dish of 18 inches, that could respond to an aircraft even with a transponder, is not easy.

Senator MONRONEY. You may go ahead.

Mr. THOMAS. I believe this covers the collision prevention subject very well.

While much research has been initiated and some completed to design engineering requirements in all three segments, no immediate panacea is foreseen. A development contract will provide for an experimental airborne CAS with expected delivery in June 1960. Research projects in infrared detection and radar interrogator-responsor techniques are also underway.

We are very hopeful that these techniques will prove successful and provide a significant increase in the safety factor.

7. Radar: FAA's radar program is a most intensive one, as radar is the most effective tool yet devised to provide better utilization of the available airspace and improve safety of air traffic.

Twenty-eight long-range air surveillance radar systems were in operation in 1959 to provide extended coverage in areas surrounding high-density air traffic terminals and extending out along high-density air routes.

Data from 14 of the 28 radar systems are for joint use by the military services and the FAA for both air defense and air traffic control purposes. The joint use of FAA and military heavy radars is a continuing program. Current planning through fiscal year 1962 envisages joint use of 54 such radars, which will result in savings of many millions of dollars.

One airport surveillance radar was commissioned in 1959, making a total of 48 such systems to operate at the year's end. In addition, service is available from 54 military airport surveillance radars we either operate or supervise. These systems have been very effective in expediting traffic and providing safety to aircraft operating in the vicinity of busy airports.

Although surveillance radars are very effective in the control of air traffic, certain inherent shortcomings of the equipment prevent continuous tracking by the controller of all sizes and types of aircraft under all conditions of weather. Neither does the primary radar have features providing rapid, positive identification of targets.

The air traffic control radar beacon does have these capabilities, and FAA installed beacon equipment at 19 locations in 1959. By mid-1960, we expect to have beacon capability in all major terminal areas covered by primary radar.

Senator, I would like to say we are talking of transponders. We use the words "beacon" and "transponder" interchangeably sometimes.

Also an integral part of the FAA's radar program is the program for improving the display of radar information to the controller. This involves the replacement of direct-reading radar scopes and the obsolescent projection systems in air traffic control facilities with new scan conversion equipment. The program is well underway with 18 systems installed or partially installed in 10 air route traffic control centers and 4 airport traffic control towers. The systems being installed at the present time will be completed early this year.

Scan conversion equipment converts radar data to a television form of presentation. This new technique of displaying radar data enables the data to be viewed in normal daylight conditions and provides numerous methods of portraying additional information concerning aircraft identity, altitude and control status to the controller. The use of these advanced displays is reffected in expanded air traffic control services and safety for aircraft operating in accordance with visual flight rules as well as instrument flight rules.

Senator MONRONEY. At that point, you have now what you might say two- or three-dimentional radar. Can you tell the altitude separations as well as direction?

Mr. THOMAS. No, sir. The only available radar in this system today is what we call plan position. Just simply two dimensional and not three dimensional. Three-dimensional radar is one of our needs, is one of our high priorities in research and development.

Senator MONRONEY. It has not been perfected yet so that it could be delivered commercially?

Mr. QUESADA. All the radar that is in use is plan position. It gives the bearing, and it gives the range.

Three-dimensional radar has been a requirement that has plagued the industry and technology for years. The Military Establishment has spent, I would estimate, at least $100 million in trying to develop a reliable and exact third-dimensional radar. Their specifications are such that they are seeking this up to a range of 200 miles. We have reduced this requirement down to approximately 50 miles, and by so doing we have decreased the difficulty down to about one-tenth of what it was. We now have under development a three-dimensional radar program in the Research and Development Bureau. And if I recall correctly, the antenna is being installed now.

Mr. ANDERSON. That is correct.

Mr. QUESADA. This is going to the point where the antenna is actually being installed at Atlantic City for continued test, and we have genuine hope that we will be able to develop three-dimensional radar with a range of approximately 50 miles, which we say is essential to effective air traffic control in high density areas.

Mr. THOMAS. Continuing with new facilities——

Senator COTTON. Before you continue, may I ask one question that is another oversimplification.

Forgetting for the moment all of the devices and systems, I suppose that in order to preserve the strength of the plane that the present windows, if you wish to call them that, used by the pilot, cannot be enlarged or added to. It always seemed to me, the few times that I have been in the cockpit, that the vision of the pilots, to look above or below, was terribly curtailed. I suppose there is no way of building planes with the present speeds and maintaining their strength and safety and have them given more vision?

Mr. PYLE. Senator, this presents a very serious problem, as you pointed out. Just as an example, the windshield on a 707 weighs in the neighborhood of 600 pounds. It has to withstand force from each direction. Pressurization of the aircraft which tends to blow it out, and possible impact from a bird or something with the plane traveling at a speed of 600 miles an hour, is an obvious severe impact in the opposite direction. So it presents a very difficult construction problem.

We have certain standards which we have developed, together with the Society of Automotive Engineers, criteria around which the aircraft designer designs this windshield.

At best it is a compromise problem between the structural integrity of the airplane, the need for the pilot to see out, and the safety of the structure to be maintained at all times.

Senator COTTON. You understand I didn't infer that you had never thought about it.

Mr. PYLE. It is a very valid point.

Senator COTTON. I was sure it had received long and constant attention not only by you but by those who build planes. But I thought as a matter of record I would like to have it touched upon. I suppose as the speed of planes has increased, size of planes and pressure, both within and without, that we are doing well to maintain as much as they have, rather than enlarging the vision of the pilot. Is that correct?

Mr. PYLE. I think that is a fair statement, although at all times we are searching, through use of new techniques, construction techniques and new materials, to give the pilot a better opportunity to look out.

This is our objective. At the moment I think that we have a reasonable solution.

Senator MONRONEY. Haven't you, as a matter of fact, in the Electra and the 707 and DC–8, greatly increased the pilot visibility beyond what it was under the old Constellations and many of the other aircraft that seemed to have been designed for midgets?

Mr. QUESADA. This is a constant problem, and it will always tax the ingenuity of the aircraft manufacturer. You have over here the aircraft manufacturer. You have over here the purchaser, which is the airline. The airline is always seeking the greater visibility. So therefore you have a competitive urge among the aircraft manufacturers to satisfy the need. It is their ingenuity that will always bring this improvement, and as indicated by the chairman, the modern airplanes have larger angles of visibility than do the older. We are on the side of the air transportation industry in doing everything we can to encourage increased angle of vision.

Senator COTTON. That situation was touched upon a week or two ago about the high-altitude pilot losing consciousness or losing his ability to think only a few seconds after one of the windows, if you call them that, blows out. So that every time you increase the visibility you get near the point where pilots have to fly with their masks on at all times.

Mr. QUESADA. This is the compromise to which Jimmy Pyle has referred. We always have to bring this down to a reasonable compromise where we have increased visibility on one hand and the necessary structural strength on the other

Senator COTTON. Do they make use in any way of mirrors within the cockpit to try to extend the view of the pilot?

Mr. QUESADA. I am not aware of any.

Senator COTTON. It couldn't be effective?

Mr. QUESADA. It wouldn't be too effective. It would probably have to be an external mirror. You would then have the problem of mounting.

Senator COTTON. I didn't have in mind an external mirror. Even I can see how difficult that would be. I wasn't suggesting it. I wondered if at the present time there was any system of mirrors in use in any plane now.

Mr. THOMAS. There have been some. This is an idea that we have been toying with for a long time. There has been research on this. I think there have been a few installations made. This is one we are looking at at all times. At the moment I don't know of any successful application of mirrors.

Senator COTTON. Thank you.

Mr. QUESADA. Among small aircraft, mirrors have been used.

Senator MONRONEY. The Aircraft Owners and Pilots Association testified in answer to questioning by Senator Engle, that for light planes they had developed rearview mirrors.

Mr. QUESADA. They have for small aircraft.

Mr. THOMAS. We were talking about larger aircraft. I am sorry.

Senator MONRONEY. If the principle can be adopted to smaller aircraft, it offers some possibility, does it not, to have one mounted perhaps on top of the plane, one on the bottom, so that you can see some direction other than forward. Today you are limited to about 180° of forward vision and almost no rear vision.

Mr. QUESADA. I don't think there is an airplane pilot that is limited to 180° of vision. This is only a technical point. There is just no question that the use of mirrors is a possibility, and the aircraft industry should certainly be encouraged to explore it and to do whatever they can with it.

Senator MONRONEY. Go ahead.

Mr. THOMAS. 8. New facilities: Establishment of National Aviation Facilities Experimental Center (NAFEC): The airways modernization and improvement program requires a test and experimentation facility to provide factual technical and operational data on which to base the selection of new facilities and procedures. Testing must be done "live" on certain cases, and by modern simulation methods in others. This has been accomplished through the commissioning of a modern, integrated national facility at Atlantic City.

During 1959, an accelerated program of implementation transformed an obsolescent naval air station into a modern test and experimentation center. High precision air position measurement instrumentation, both electronic and optical, was procured and installed. Laboratories and shop facilities were activated. An electronic computer facility was designed and installed for the reduction and analysis of scientific and engineering data. The runway and taxiway complex was expanded to accommodate the programed flight test schedule.

One example of the effectiveness of the use of NAFEC as a modern test facility for research and development projects is the runway and approach lighting system evaluation program. Six runway and ap-

proach lighting systems have been installed at NAFEC and another is scheduled for delivery in February. As these are experimental systems, the variations can be derived from the installed equipment, and extensive flight testing and evaluation are now underway. This represents the first time that a variety of lighting systems could be tested and evaluated under identical, controlled conditions. This work will lead to better airport approach and runway lighting so important to the handling of a greater volume of landing operations safely under conditions of poor visibility.

Airport traffic and control towers: In 1959, the FAA inaugurated airport traffic control service at eight additional airports which qualified for such service under approved aeronautical activitiy criteria. Five additional towers will be commissioned by July of this year. FAA now provides airport traffic control service at a total of 222 airports throughout the United States.

RAPCONS and RATCC's: I might say that RAPCON is the Air Force name for radar approach control facility, and RATCC's is the Navy facility which is a somewhat similar facility.

By the end of 1959, FAA operated USAF radar approach control facilities (RAPCONS) and U.S. Navy radar air traffic control centers (RATCC's) at 31 military terminal locations. Additionally, 23 FAA resident inspectors were assigned to military radar control facilities where the airport or the radar facility is used by both military and civil air traffic. These resident inspectors permit the FAA to supervise and accept responsibility for the control of all aircraft, both military and civil, from the military facility. This insures continuity of service and maintenance of FAA standards of performance at a total of 54 such locations.

Air route traffic control center (ARTCC) building program: An impressive start was made in 1959 on the very critical program of inadequate space in air route traffic control centers. The crowded conditions in most of these centers, which are in rented quarters not designed for the functions being performed, have made it impractical to install the new equipment and systems necessary to improve the capabilities of these facilities.

An aggressive building program provided improved operating space for the San Antonio center in 1959, and buildings for six others were started. In all, 15 new centers will be under construction or have been completed by July of this year.

Senator MONRONEY. These centers are not located on the airports, as I understand it. They are usually a good distance away from the airport.

Mr. THOMAS. Some are at the present time, and some are not. We are following a dispersal program in the location of new buildings which principally puts them away from the airports.

Senator MONRONEY. Is there a technical reason for that, or is it just——

Mr. THOMAS. From our viewpoint we would rather be on the airport to be closer to the activities. However, we are taking into account fallout, some minor protective practices, washdown for radiation, and general dispersal criteria which has taken us away from the airport.

Senator MONRONEY. As new airport terminals are built, for example, as some are, in Atlanta and other places, will you have built in as a part of the Federal contribution the space necessary for these air traffic centers?

Mr. THOMAS. No, sir.

Senator MONRONEY. You go outside the terminal itself?

Mr. THOMAS. In virtually all cases we are outside the terminal building due to congestion, because of the very large space we require. Specifically in Atlanta and some of the others, we have to get completely outside of the airport area to provide for dispersal.

Senator MONRONEY. That is dispersal in event of attack?

Mr. THOMAS. Yes, sir.

Expanded pilot-controller air-ground communications: Direct radio communication between the pilot and controller provides a rapid means of issuing control instructions. ATC controllers have been provided with direct communication facilities for high altitude control services and for lower en route altitudes where high density air traffic is involved. Peripheral communication outlets to provide the capability totaled 255 sites by the close of 1959.

While the direct pilot-controller communication technique is an important aid to expeditious air traffic control, it is a system which will ultimately become overloaded as air traffic continues to increase. In recognition of congestion, frequency problems, and the pilot and controller workload associated with manual communication, we have arranged for the design of a system to provide two-way automatic digital data transfer between aircraft and air traffic control facilities. This equipment has been delivered and is now installed at NAFEC. The flight experimentation and modification program is now taking place and will be completed by June 30, 1960. As a result of this program, engineering specifications will be written for an automatic communication system program for use in the actual air traffic control system.

Senator COTTON. Mr. Chairman, may I interrupt?

Senator MONRONEY. Yes.

Senator COTTON. This you have explained very well, but it is still difficult to visualize by some of us who are not technicians.

If I am flying in a commercial plane into a busy airport, say National in Washington, or LaGuardia, and it is a cloudy day, and you can't see, and the plane is stacked up with a lot of other planes waiting their turn to land, what is the ground control, in simplified language, today and what changes are taking place as a result of your policy?

Mr. THOMAS. At the present time the controller who is handling your flight talks to you on a microphone much like this. You repeat back your instructions for the holding pattern that you will be in, on your time to approach. This is human communications direct between the pilot and controller.

Senator COTTON. He tells you—under the present situation, he tells the pilot that he must be at a certain height, and other planes, he stacks them up and tells them at what altitude to fly in, and the pattern, to be safe?

Mr. THOMAS. Yes, sir; very precisely.

Senator COTTON. In order to tell him precisely does he tell him a lot of words? Is there some time consumed? I don't mean time in the sense that we are talking in this committee room but time when speeding planes are flying around. It is brief, succinct, or difficult because of the time limit?

Mr. THOMAS. It is about as brief and succinct as we know how to make English. However, that in itself is time consuming.

To be sure that the instructions are understood we have the pilots repeat back their instructions. So we use up the time twice, in effect. This is very important to be sure there is no misunderstanding.

What we are attempting to do here in communications is to take the routine communications, in effect, the position reports, altitudes to fly, and let those be passed back and forth between the controller and pilot automatically without the controller or the pilot actually doing more than monitoring.

Senator COTTON. Do you mean like a teletype communication?

Mr. THOMAS. Yes, sir; except infinitely faster.

Mr. QUESADA. Maybe I can help this. About 80 percent of the communications that would take place between you and me, assuming that you are the pilot and I am the controller, are routine in nature, and they are being subject to being transmitted, for all practical purposes, in this form. About 80 percent are of this character.

If we could bring some economy in this area we would be making a significant advance in the more efficient use of the radio spectrum. The device to which we are referring would take the routine messages, the message to which we are referring, take a 2-minute message, reduce it to about 2 seconds, and then either transmit that to you in 2 seconds, rather than 2 minutes, and then expand it on your end to an understandable and meaningful message, and, in turn, when you wish to transmit to me a message that would take 2 minutes, you would put it in digital form, which would take a 2-minute message, compress it into 2 seconds, and you would then transmit it to me and I would stretch it out into meaningful terms.

Senator COTTON. So that as there come more and more planes in the air seeking to land and piling up, with the increasing air traffic, the problem is to conserve time and to speed up the messages to make the situation more safe. I understand this doesn't simply apply to landings, but it is what I always envision.

Mr. QUESADA. It is precisely that. However, we think of it in terms of making the spectrum more useful. Any given frequency then can be used more, because 80 percent of the use of this frequency is routine, and we can take up very little time in accomplishing the 80-percent requirement to leave to emergency or unusual conditions the time that is saved.

I ought to add that our device, that we are developing and now testing, does not require any radio equipment either in a commercial airplane or a military airplane, other than the attachment. This is attached to existing equipment.

Senator COTTON. To make it simple for a layman, it is almost a teletype arrangement?

Mr. QUESADA. That is right. The message is compressed.

Senator COTTON. I appreciate that.

Senator MONRONEY. Does this come out audio or written?

Mr. QUESADA. It will come out written—readable.

Senator COTTON. In other words, the routine messages, the 80 percent, the pilot would look at. The other messages would be a two-way conversation?

Mr. QUESADA. That is correct.

Senator COTTON. Thank you for that very lucid explanation.

Do you know of any way that you could introduce that system on the floor of the Senate? [Laughter.]

Mr. THOMAS. Automation in air traffic control: In 1959, the FAA installed six electronic computer systems in air route traffic control centers located within the heavily traveled northeastern portion of the United States. These computers automatically transfer aircraft movement data between computer-equipped centers and perform many of the routine data-processing duties of the traffic controller, thus enabling him to devote more time and attention to his control function. The result is greatly increased efficiency within air route traffic control centers and improved safety and expeditious handling of traffic.

Effective handling of the large volume of volatile data used in the air traffic control system requires specially designed computers of great capacity. We have a very extensive research and development project leading to the use of computers having transistors and other "solid state" components which will form the core of a system called the Data Processing Central (DPC). Several components of this experimental DPC system have been delivered and installed at NAFEC, and will shortly be tested as a system, using both real and simulated inputs. We expect that the DPC system will perform automatically many of the functions involved in detecting and solving air traffic conflicts, and thereby lessen the possibility of human error, expedite traffic, and further improve safety.

9. Joint use of FAA and military facilities: In addition to the current program for joint use of Air Defense and FAA long-range radars, there has been a continuous study and experimentation program since the establishment of the Airways Modernization Board (AMB), predecessor agency of FAA Bureau of Research and Development, designed to obtain maximum joint use of all related air defense and air traffic control facilities, including radars, computation and communications facilities.

10. Noise abatement: While we have had aircraft noise abatement and preferential runway-use programs at airports in areas of high population concentration for many years, turbojet operations placed new emphasis on the aircraft noise problem during the "open window" seasons of spring and summer 1959. The noise created by aircraft, particularly those of the turbojet transport category, is recognized as a serious problem and of great concern to the general public, airport operators, jet aircraft operators, jet pilots, and this Agency.

In his earlier statement on air safety, Mr. Quesada included, in his enumeration of the various elements comprising the public we serve, the many millions who stay on the ground and merely wish protection from aircraft. As your committee knows, the new Federal Aviation Act amended the Civil Aeronautics Act of 1938 to authorize our issuance of air traffic rules both for the safety of aircraft and "for the protection of persons and property on the ground." The protection contemplated includes, of course, normal considerations of air safety

as well as noise. Often the best traffic patterns or preferential runways for noise abatement have presented technical safety problems involving other aspects of jet aircraft operations. In addition, some areas present very difficult problems of rearranging closely related air traffic patterns, particularly where several different airports are near each other.

A comprehensive program has been established to minimize noise factors inherent in aircraft flight. This program includes action to—

1. Review airport traffic patterns to make certain that they are most responsive to noise abatement.

2. Explore and implement, where feasible, maximum use of those runways which will permit special arrival and departure routes over the least populated areas.

3. Relocate or establish new facilities where present navigational systems are not compatible with noise abatement programs.

As concrete evidence of these actions, Civil Air Regulations Draft Release No. 59–17, entitled "Los Angeles International Airport Traffic Pattern Rules," was published in the Federal Register on November 5, 1959, and similar regulations for Washington National and New York International Airports are now under development. Thus, for the first time, a noise abatement program has been proposed in the form of a rule which, if adopted, will provide an enforceable standard.

We do not wish to hold out the promise that either our rulemaking or the cooperative actions of the industry will eliminate aircraft noise. At best, our current efforts will keep noise at acceptable levels through the best arrangements of traffic patterns while we are attempting to find other methods of reducing noise.

Senator MONRONEY. We had testimony earlier from the air pilots that impressed me a great deal, particularly on the Los Angeles International Airport rules, that might indicate that you were about to make a compromise with maximum safety to accommodate the noise-abatement problem. As important as noise abatement is, if you have to compromise with downwind takeoffs to get away from the noise disturbance, I don't think this committee is going to be one bit sympathetic. If it is too difficult to get the planes off, then the planes should not be allowed to take off under conditions other than those which would insure the maximum safety in takeoff.

Mr. THOMAS. Mr. Chairman, the FAA would not be sympathetic, either, with a compromise with safety. We are studying this particular problem. This is primarily why the Los Angeles rules have not been issued at the moment.

Senator MONRONEY. Does this Los Angeles noise rule include a downwind takeoff under any conditions?

Mr. THOMAS. The Los Angeles noise rules as proposed and published in the Federal Register did provide that between the hours of 10 p.m. and 7 a.m., as I recall, no takeoffs would be made to the east unless the wind was from the east more than 10 knots. This did mean that if any aircraft took off between those hours that they would take off downwind if there were such a wind. This is a voluntary program that was approved by everyone concerned, and is now in effect at Los Angeles, although not by rule. The aircraft has been for downwind operation. We are still looking at this, to see whether this is the wise thing to do.

Senator MONRONEY. Your jets are very susceptible to crosswind conditions, are they not?

Mr. THOMAS. This is a whole area of engineering, Senator, that is a little bit beyond me, and that we are looking at quite extensively right now to be sure that there is no compromise with safety. However, we have not proposed anything that has not been demonstrated or certificated in engineering test flights.

Senator MONRONEY. There is no jet landing permitted on Washington National except under very light load.

Mr. THOMAS. That is correct.

Senator MONRONEY. What is that rule? Similar regulations for Washington National and New York International are now under development. What are you trying to do on Washington National?

Mr. PYLE. If I might explain, Senator, I think perhaps we are getting two problems tied together here.

In Washington National no jet operations are permitted whatsoever. The only operations that take place there are those under emergency conditions, and the carriers can use it as an alternate, providing the landing weight is such that it is safe. They take off without any passengers and ferry to either Baltimore, New York, or wherever it may be that they have to go. This is strictly an emergency operation.

Perhaps Mr. Thomas will speak to the noise factor we are working on. This is a different problem.

Mr. THOMAS. Senator, we don't find the noise solely limited to the jet aircraft. We have been studying the problem at New York International, Washington National, and some others with regard to the best traffic patterns we can have insofar as noise is concerned.

We think that it will be much more fruitful to eventually study these at the local level and to work at them on the local level instead of at the national level. However, noise as a problem in enforceable traffic patterns is relatively new to us, and we are simply trying to define our policies now in working with these first two or three prototypes.

Senator MONRONEY. I can understand how the noise element would be disturbing, particularly with your jets, before you get to the turbofans which may succeed in reducing it by some percentage. But actually you must protect the homeowners who live adjacent to the field the same as you protect the airline passengers. This doesn't involve a major consideration for the disturbance but for their lives and safety. Certainly any compromise, or reducing sound minimums for runway length and wind direction to accommodate to the noise situation, could lead to a catastrophic wreck which could not only claim the lives of 120 passengers, but many more people if a heavy jet strikes into a subdivision on the ground, would be a poor choice of safety and a poor lining up of disturbance with actual physical danger.

Mr. THOMAS. We agree with you completely.

Mr. PYLE. I would like to put it even more strongly, Senator. We concur entirely and exactly with what you say. We are all aware of our responsibility in this area, and this does not make our noise problem any easier. Safety is first, last, and foremost. Only to the extent that safety is not compromised will we proceed in any areas which will lessen the noise problem.

Senator MONRONEY. I am sure that is what you feel. But let's see what we are getting to. You have a rule now which will not permit a takeoff in an easterly direction at los Angeles between the hours of 10 p.m. and 7 a.m.

Mr. THOMAS. If I may, there is no such rule. If I may, for the record, the committee which was formed in Los Angeles volunteered—this is a committee of airline people, the airport management and others, working together—voluntarily agreed not to take off to the east between those hours.

Senator MONRONEY. Ten o'clock in the evening and seven in the morning?

Mr. THOMAS. Yes, sir, as I recall.

Senator MONRONEY. What was the wind direction?

Mr. THOMAS. If the wind was more than 10 knots from the east. So this would provide, if they took off at all, on some occasions, a downwind takeoff to the west in Los Angeles. The airport——

Senator MONRONEY. This would provide for a 10-mile downwind takeoff?

Mr. THOMAS. Yes, if they took off.

Senator MONRONEY. Is the other direction, the long runway that goes out over the sea—I thought that was north-south.

Mr. THOMAS. No, sir; it is runway 25, east-west principally. The only runway, in fact, they can use at Los Angeles is the runway 25.

Senator MONRONEY. Ninety percent of the wind direction usually provides for takeoff over the ocean?

Mr. THOMAS. Yes, sir; this is correct. And then the rule we proposed, that we sent out in November, we incorporated those things that had been voluntarily agreed to, including that provision. We got many comments on that rule; many, many comments. Some of the comments we got are along the lines of your suggestions, and this is what we are looking at.

Senator MONRONEY. I want to explore this just a little bit more.

Suppose this hypothetical case, that this rule was in effect, and you do have a 10-mile tailwind takeoff, and it is the only way the plane could take off if that were the rule between the hours of 10 p.m. and 7 a.m. The airline says this is the departure we need, we want, it is heavy traffic, we have to go across country, nonstop. Then if the airline decides to accept this 10-mile downwind takeoff and the pilot, who feels that this is a dangerous procedure, as at the moment I feel, he is either subject to refusing the takeoff and perhaps company action, or something, for his refusal to take off under what he presumes to be a dangerous condition, and he will wind up probably flying a milk run someplace with a DC–3, won't he?

Mr. THOMAS. I don't know that there is a specific answer to this. No. 1 is that the present regulation is that the load must be suited to the runway and wind conditions.

It has been demonstrated that the airplane will take off under downwind conditions. So, therefore, he would be within his runway limitations. Whether or not this is still smart is the thing that we are looking at at the moment.

If he elected to take off to the east, all that we require from him in the rule is a report of why he did so, and it would be examined to see whether or not he was correct.

Senator MONRONEY. But if the rule says that you must not take off to the east if the wind is less than 10 miles out of the east, then he would be violating an air safety rule. He would be subject then to penalty because he refused to compromise with what he considered safety; he would be subject to penalties and fines; and yet, if he insisted on refusing to violate what he considered safety, he is in trouble with his airline, isn't he?

Mr. PYLE. Mr. Chairman, I think you put your finger on the very reason why we are concerned with this thing, and we are studying it from that very standpoint. We want to be assured that we are doing the right thing.

The second point that Mr. Thomas touched on, which we must remember, is if he doesn't undertake this operation, and provided it does become a rule because we consider it safe, there are certain load limitations on such a takeoff. The kinetic energy we will say of the airplane will be reduced by such a loading. This might be such an unprofitable operation the airlines would not undertake it, and they would have to stop at Tulsa or some other place to get more fuel to get across country.

Senator MONRONEY. That is a very good place to stop. We would welcome midcontinental service at any time.

Mr. PYLE. That is out of our jurisdiction. But the point being that it is a very valid point, we have gotten some constructive and helpful information from many people on this very point, including the Air Line Pilots Association, which we are taking into our consideration of this problem. You can rest assured that nothing will be forthcoming that in any way compromises safety, because this is No. 1 on the priority list.

Senator MONRONEY. In other words, if you promulgate this rule, and you did permit a downwind takeoff up to 10 miles an hour, then you would have the right to draw the takeoff weights to such a point where he would either offload passengers and fuel and baggage so that you could reach a safe takeoff under even those conditions.

Mr. PYLE. It would be within the capability of the pilot to control, let's say, an aborted takeoff. This is a mathematical computation. It would mean, in this instance, undoubtedly a reduction in load because you must remember that energy is a function of speed. We have added 10 knots to the speed because he is going downwind, so obviously he must take this into consideration in computing the load of his airplane.

Senator MONRONEY. He must have about 20 knots more speed because you are sacrificing 10 on one side and adding 10 on the tail?

Mr. PYLE. Yes, sir; and this presents a real problem and we are well aware of it.

Senator MONRONEY. And all possible study before this is put in will be made, and all comments from every branch of the industry will be not only solicited, but listened to?

Mr. PYLE. Absolutely.

Senator MONRONEY. This rule is not in the direction of air safety but away from air safety.

Mr. PYLE. It is not so intended, Senator.

Senator COTTON. Let me call the witness' attention to his statement starting at the bottom of page 14:

Often the best traffic patterns or preferential runways for noise abatement have presented technical safety problems involving other aspects of jet aircraft

operations. In addition, some areas present very difficult problems of rearranging closely related air traffic patterns, particularly where several different airports are near each other.

The first sentence, I take it, in your direct statement, means exactly what you have been saying to the chairman, that safety will not be sacrified for noise abatement.

Mr. THOMAS. That sentence was written precisely for this.

Senator COTTON. The second sentence, would you amplify that a little bit?

Mr. THOMAS. Yes, sir. For example, I think known to all of us is the relative physical location of Idlewild and La Guardia at New York. The best traffic patterns for La Guardia are not necessarily the best for Idlewild because we are seeking the same relatively, least populated areas. So we have to look at the traffic pattern of the community as a whole and to fit the best traffic pattern in between the various airports so that the airplanes do not collide with each other, with the very thought in mind which Senator Monroney expressed, that we don't want to introduce a worse pattern, that is, one from collision, by trying to avoid noise. So we have to look at the community as a whole to see how the various airports fit together, and we have to look at the operation of the aircraft to see that we are not introducing a safety problem.

Senator COTTON. To simplify it, to be sure I understand you, where you have several airports—two or more airports—in fairly close proximity, perhaps at one of them the noise problem would not be great because it is more isolated. You don't propose in the interests of abating the noise problem to overload that airport with more traffic than it can safely receive for the sake of abating the noise at the other airport?

Mr. THOMAS. That is correct, sir. Our instructions and philosophy and our whole being is safety first, noise abatement comes second, and convenience third.

Senator COTTON. Thank you.

Senator MONRONEY. We have a quorum call, and it is 5 minutes after 12. I believe the committee had better stand in recess until 2:30.

(Thereupon, at 12:05 p.m. the subcommittee was recessed, to reconvene at 2:30 p.m.)

AFTERNOON SESSION

Senator MONRONEY. We will return to the witness we had this morning, Mr. Thomas, and members of the FAA who were testifying this morning.

I believe you were on page 16 of your statement.

Mr. THOMAS. Thank you, Mr. Chairman.

11. Civil Air Regulations Amendment 60–14: On December 29, 1958, the Civil Aeronautics Board adopted Civil Air Regulations Amendment 60–14 to provide additional uncontrolled airspace wherein aircraft might operate with flight visibility as low as 1 mile without meeting the requirements set forth for instrument flight.

Realizing that an extensive revision of the national airspace structure would be required by the amendment, the Board established a mandatory effective date 1 year from the date of adoption, with a provision that upon 30 days' public notice all or part of the amendment might be made effective.

The implementation of this amendment is a task of tremendous magnitude. The amendment provides, among other things, for the raising of the floor of the control areas from 700 feet to 1,500 feet above the ground. This increase provided for a then unknown impact on the minimum altitudes available for the operation of aircraft in instrument weather conditions, as instrument operations are based on an altitude of at least 1,000 feet above obstructions—such as buildings and television towers—while amendment 60–14 provided for the base of the control area 1,500 feet above terrain—not manmade obstructions. To insure that these two altitude demarcations with different reference points are properly adjusted with respect to each other, a comprehensive review of the entire national airway structure, including flight checking, was essential. We examined some 310,000 miles of route segments and thousands of associated air-traffic-control procedures. Although we felt certain that in some areas the flight and air-traffic-control procedures and altitudes would not require change, there was no alternative but to conduct individual analysis and to be be able to make determinations on the side of safety.

In addition to the time required for these innumerable detailed analyses to be accomplished and determination made, airspace designation actions also require additional time. The volume of airspace actions necessary to implement amendment 60–14 must be handled under the rulemaking provisions of the Administrative Procedure Act. In October 1959, it became apparent that completed action to readjust the entire national airspace structure could not be completed by January 1. It was necessary, therefore, to extend the implementation date until July 1, 1960, in order to give the agency additional time to implement the amendment. A notice to this effect was issued on December 24, 1959.

Having made these analyses, we became convinced that amendment 60–14 does not meet the stated needs of general aviation for "free airspace," as it provides for no specific clearance over obstructions. In fact, it would permit and encourage flight in poor visibility conditions below the tops of radio and TV towers, or even below the tops of tall buildings.

It seems to us that airspace room sufficient to clear obstructions at reasonable heights is necessary wherever flight is conducted. We also believe that the rules should be as simple as possible. Further, the safety of instrument operations should not be compromised by providing more airspace to those who do not desire to participate in the air-traffic-control system.

*On the basis of our analysis, we will start implementing* 60–14 in those geographical areas where it is in line with our objectives of *safety, and will start action to amend 60–14 to achieve the objectives* of the flying public. Our program has been discussed with the *General Aviation Council, who will work with us and other users in defining* the requirements of both instrument and visual operations more *sharply.*

Senator MONRONEY. You mentioned the General Aviation Council. *I believe this is the first time they have been named. Who is represented* on the General Aviation Council?

*Mr. THOMAS. Sir, I do not have the entire list, but it is mostly the* principal organizations which do devote themselves to general avia-

tion problems, such as the Aircraft Owners and Pilots Association, the National Business Aircraft Association, National Association of State Aviation Officials, Aircraft Industries Association is represented on it, Flying Farmers, the Flying Physicians, National Pilots Association, National Aviation Trades Association. I am sure I have left out some.

Senator MONRONEY. I would suggest that you check the record. You have given us the blue ribbon groups in aviation. I am glad to know that they are represented on this council.

Could you, then, for our purposes detail how the consultation has occurred?

Mr. THOMAS. In this particular instance?

Senator MONRONEY. Yes. Use this as a test tube case.

Mr. THOMAS. In this particular instance there were some individual discussions actually with various member groups or individuals that comprise the council. It was agreed that it would be well to discuss this entire matter at the then regularly scheduled meeting of the General Aviation Council. It was arranged for Mr. Pyle, myself, and the Chief of our Regulations and Procedures Division to meet with the council.

We did meet with them, we did discuss the problem. We discussed our action and some possible solutions. The council as a group, insofar as I knew, took no formal action at that time, saying we either approve or disapprove, or anything else. However, they did designate some personnel to work with us on sharpening up our proposed solution, and we are proceeding along those lines.

Senator MONRONEY. This was consultation and discussion with the actual users of the airspace that would be affected by this amendment.

Mr. PYLE. Mr. Chairman, I think it might be well to explain that a great deal of misunderstanding had arisen about, let's say, the status and the future of this whole problem area. It became my conviction, and to this extent I felt certainly responsible in view of my previous position with the Civil Aeronautics Administration, to be sure that there was no misunderstanding as to the practical aspects of this problem.

There were a great many things from the strictly safety standpoint, in 60–14 that to me spelled an unsafe procedure, that we were headed toward an unsafe environment. I felt that this should be very carefully explained to those who were primarily interested in this area. And it was for this reason we held this meeting. It was at my urging and at my instance. It was a matter of getting the facts out on the table so that they understood what was going on.

Senator MONRONEY. And the views of these groups were taken into consideration for this resurvey of not only a thousand feet above terrain, but a thousand feet above any obstruction?

Mr. PYLE. This is the problem, Mr. Chairman. There is an entire mixture of two criteria. There is a conflict. It seems to me from the standpoint of safety we must provide clearance above obstructions; 60–14 does not do this. Therein lies our problem.

Senator MONRONEY. In all cases this area of uncontrolled airspace will always take into consideration the terrain and not the height above sea level. As we started into this I heard a lot of complaints—as you started into it—that at the higher altitudes these people were

being squeezed down to where they would almost have to bore a hole in the ground to fly, if it were interpreted as above sea level, rather than above terrain. I intended to give them an adequate amount of altitude above the terrain that they can maneuver their planes and have reasonable safe flight, is that correct?

Mr. THOMAS. That is correct, Senator. The big problem I think was that 60–14 as it was written, outside of the terminal areas away from the cities, provided for 1,500 feet above terrain. Our other altitudes were measured above any obstructions.

Our problem was that an altitude above terrain could well be below very tall television towers and below other obstructions. What we are trying to work out is to provide clearance over obstructions and above terrain.

Senator MONRONEY. Are you having increasing problems with towers that reach into the sky that penetrate above a thousand or 1,500 feet?

Mr. THOMAS. Yes, sir.

Senator MONRONEY. You have the right, however, to lodge a protest, do you not, or is it before you yourself that these matters of permits for new super television towers come?

Mr. HOWARD. Senator, the way in which this is now handled is that the FAA, in effect, is the focal point for developing the aviation interest position, and this position is then addressed to the Federal Communications Commission which has the actual authority that you mention.

Senator MONRONEY. You then represent the aviation position before the FCC?

Mr. HOWARD. This is correct.

Senator MONRONEY. Do you find the FCC cooperative? In other words, if you would report that a certain tower was a hazard to air safety, finding it on the airways and going too high, do you find the FCC cooperative in their activity when that viewpoint is expressed by the FAA?

Mr. HOWARD. I think that this is almost always true. It would be a little unfair to say that there isn't an occasional case which is rather hard fought, however.

Senator MONRONEY. What other obstructions do you find? Tall buildings, oil well derricks, and what else? Anything else which begins to impinge on airspace?

Mr. THOMAS. Our principal concern is, of course, the radio and television towers because they tend to be the highest. There are other obstructions, particularly near airports, such as water tanks and tall buildings, grain elevators, smokestacks of various companies. It depends particularly on the location of the structures as to whether it gives us a problem or not.

Senator MONRONEY. Suppose somebody wants to put up a big water tower, for example, to serve a large industry in the landing pattern of a large city airport. What are your powers?

Mr. THOMAS. Our powers are to require them to give notice in proper form. Having given notice in proper form we are limited then to moral persuasion, unless the local community in itself zones for protection.

Senator MONRONEY. You have no way that you can prohibit the obstruction of a main approach to a large runway, is that correct?

Mr. THOMAS. No, sir; not unless the local community itself has. There is no Federal zoning power or construction permit power.

Senator MONRONEY. Have you ever considered the control of all navigable airspace which the Federal Aviation Act gives you? Obviously you would have a hard time making a man take down his water tower. But have you ever considered that under this you might go into court and have a test of this right to deliberately—in other words, moral suasion is all you say that you have—deliberately prevent a man from creating this hazard?

Mr. HOWARD. Senator, I might point out a refinement here that may not be evident. We cannot, by zoning or by any direct provision of the act, prevent the person from building the obstruction. But we could, if it were necessary, when the chips are finally down, condemn an avigation easement which would in effect prevent this. In other words, take a property interest which would prevent him from putting up the obstruction.

Senator MONRONEY. You think that you have the right and power under the law that you could demand an avigation easement if necessary?

Mr. HOWARD. This would be actually effected by the local community, but it would be a condition, really, of the operation of that airport that the clear zone exists.

Senator MONRONEY. You have the right to close that runway, which would cost the city perhaps a million dollars?

Mr. HOWARD. That is correct.

Senator MONRONEY. You may proceed, Mr. Thomas.

Mr. THOMAS. 12. Inflight evaluation: A comprehensive inflight evaluation program for monitoring air traffic control services from a user standpoint has proved to be very effective in indicating system deficiencies during the past year. Started at the lower altitude levels with our own aircraft, the program is being expanded to high altitude strata through cooperation of USAF, which has made a jet aircraft available for use for this purpose.

Thus far, the program has included 57 missions with a total of approximately 115 hours of flying time.

Senator MONRONEY. While we are on that, I think you had some money for some high altitude check planes in the last appropriation bill. Is it not a phenomena that there might be a variation of your radio ranges at high altitudes, and that this requires constant monitoring to be sure that they are not deviating?

Mr. THOMAS. These are two separate programs. This is correct. The B–57's operated in flight inspection carry roughly 2,000 pounds of gear in them just to determine the adequacies of the radio signals in navigation.

In this particular case we utilized Air Force aircraft with our Air Force or other personnel who are qualified in the aircraft, to file instrument flight plans, and we put a tape recorder in the aircraft. This is a test of the air traffic control service and not the navigation facilities. The controllers are completely unaware of the purpose and to them this is just another random unknown aircraft showing up in the system.

When we get down we go over these recordings with the controllers and with ourselves. It is amazing the things that we can learn that

can assist in the way of planning. We are not looking for deficiencies of people. We are trying to see how we can do it better. This helps us a great deal.

Senator MONRONEY. In other words, as you check outside non-Government people and companies with check rides and with check on maintenance and all, you also constantly engage in a check on your own personnel?

Mr. THOMAS. That is correct. I frequently do this myself on an anonymous basis.

13. Aviation meteorological requirements: I would like to make it clear that, while we are vitally interested in the area of aviation weather requirements, we are not operating independently. A close working relationship is maintained with the Weather Bureau, the Department of Defense, and the National Science Foundation's Interdepartmental Committee for Atmospheric Sciences.

The increasing volume of air traffic and the introduction of high performance aircraft into the aviation inventory impose a need on the weather system for more accurate and timely information. How weather information is used by all segments of aviation is being analyzed by our Research and Development people to determine if user requirements are being met.

The analysis will also evaluate user requirements in the light of future operations to determine the effect on the weather system capability. Evaluations will include the optimum type, frequency, form and manner of presentation of meteorological information for pilots, air traffic controllers, and flight operations personnel, and will also encompass flight planning, takeoff, inflight and landing phases of operations.

In partnership with the U.S. Weather Bureau and the Department of Defense, the Agency is participating in the development and installation of a national weather system. In addition to organizing, exploiting, and expediting the application of existing technology in the field of meteorological research and development, an integral part of the program will be the improvement of collection and dissemination of both raw and processed meteorological data.

This project is proceeding rapidly. A test network of military air bases and civil airports in the northeastern section of the United States will be in limited operation in the fall of 1960, and in full operation in early 1961.

Senator MONRONEY. I think the burden of not the most spectacular but a very vital phase of aviation which the pilots term "journey's end," has occupied a great deal of this committee's time and interest.

We had testimony the other day that we have only one of the commercial airports in the country which is equipped with RVR—runway visibility range. I believe that is at Newark. This, of course, is a Weather Bureau development, but it is a highly important part, according to testimony we have heard, for the orientation of the pilot as he makes his final approach.

Particularly is this true in that the ceiling reported sometimes on a large airport such as Idlewild or Washington National, can vary as much as 200 feet or more between the end of the runway which the pilot must use and the point where the observation of the ceiling is made by the Weather Bureau.

I would like to ask what is the possibility of a rapid expediting of this RVR system to give the pilot the needed information he has at the instantaneous reading on his final approach.

Mr. PYLE. Mr. Chairman, this program is moving considerably faster than perhaps even the information you have at hand indicates. I think Mr. Tippets can bring us up to date most rapidly in the interest of time.

Mr. TIPPETS. Mr. Chairman, we are working with the Weather Bureau to move this up. We have now some 31 projects on the book that are underway, and more coming right behind these. We are trying to expedite this very vital program.

Senator MONRONEY. This RVR has now been tested, approved, and is now ready for installation and it is no longer in the experimental stage, is that correct?

Mr. PYLE. Mr. Chairman, we will furnish for the record that there are six RVR services now in operation—two Idlewild, one Newark, one Washington, one Boston, one Los Angeles. For instance, there is one at Washington National, to my knowledge. I have used it. We will furnish for the record those that are in being, and those that have scheduled completion dates.

Senator MONRONEY. You consider this a very important step?

Mr. PYLE. Yes, sir.

Senator MONRONEY. For giving the pilot the information he needs before the critical point of touchdown.

Mr. PYLE. It is absolutely essential. We have worked very closely with the Weather Bureau. We have a mutual interest in this. It is made of components for which we are responsible and for which the Weather Bureau is responsible. We will get the information for you on the record. It is a better picture than has apparently been presented to you.

Senator MONRONEY. The funds are always important. Where will you get the money? Does this come from the Weather Bureau funds or Federal Aviation funds?

Mr. QUESADA. Weather Bureau funds.

Mr. PYLE. So that there is no misunderstanding, it is both funds. In other words, the RVR as such is Weather Bureau. But to implement it and to give the pilot the best information and thereby enable him to go to lower minimums, it includes the instrument landing system, the approach lights, the sequenced flasher lights, the outer marker, middle marker, and the transmissometer. I think those are the essential components that are included in the overall RVR program.

Senator MONRONEY. Let me get it straight. Three-fourths or five-sixths of this gear is FAA installations. This vital part of the RVR, this oblique reading, as I understand it, you can simplify it by saying this is what the pilot will see when he is looking out of the cockpit, is this a Weather Bureau function and Weather Bureau expense?

Mr. PYLE. Transmissometer is supplied by the Weather Bureau with its funds.

Senator MONRONEY. Can you say whether the funds asked for in the President's budget for this are adequate to meet what you feel are the reasonable needs in this area?

Mr. PYLE. I would have to check that. I believe that the RVR program as scheduled by our respective agencies is scheduled by the

President. I will have to check that and we will submit a statement on that.

Senator MONRONEY. In other words, if you are ready to implement all of these necessary facilities which I have described, I would like to know if there will be gaps in the system where the RVR would not be operative and would have to wait 2 or 3 or 4 years for implementation.

You do consider it a very vital aid to air safety in the final approach and landing, do you not?

Mr. PYLE. Definitely, Mr. Chairman.

Senator MONRONEY. And a very great forward technical advance?

Mr. PYLE. Definitely.

Senator MONRONEY. You may proceed.

Mr. THOMAS. 14. Training and personnel:

The dedicated men and women who serve the public at our en route and terminal control facilities and communications stations contributed far more to safety than their duty requires or the bare statistics show. As a spokesman for them, I would like to echo the appreciation expressed by the Administrator to Senator Monroney and Senator Engle for their warm compliments to the controllers and communicators.

Senator MONRONEY. We appreciate that. I would not like to make this an exclusive compliment. Everyone who has testified knows far more than the chairman does, and has been equally as high in the praise of the dedication of these men.

Mr. THOMAS. I think it would be proper to recite some of the actions of these personnel which, by and large, go unnoticed and unrecorded.

Although all of our attention is focused now on the tragedies that have occurred in aviation, we have records of several hundred potential accidents that did not happen during 1959 due to the helping hand extended to pilots in distress by radio and radar. There are hundreds of other incidents where pilots were saved from only inconvenience, or discomfort and, unfortunately, there are some where our best efforts were not enough to help a pilot extricate himself from some emergency.

One of my most pleasant rewards is reading the frequent letters we receive from grateful pilots commenting on some courtesy, or even stating that they owe their lives to some controller or communicator whose cool voice and swift action made only an incident out of an emergency. An example or two will illustrate these incidents.

One dramatic example occurred near Baltimore. One night the pilot of a small aircraft contacted Baltimore advising his engine was losing oil pressure. A Baltimore controller identified the aircraft on his radar and started vectoring the aircraft to reach Harbor Airport in Baltimore. Soon the engine stopped and the only airport in reach was a small unlighted sod field represented by a dot on the radar scope. The controller vectored the powerless aircraft to a safe landing at the unlighted airport. Certainly, tragedy was averted.

Another case involved a communicator at Dothan, Ala., who received a plea of assistance from a private aircraft that was lost on top of an overcast and his navigational equipment was not working.

The communicator requested the assistance of some military facilities in obtaining bearings on the aircraft with the direction-finding equipment and located the position of the aircraft. Between the communicator and a military tower, a military aircraft was vectored to the position of the lost aircraft and the military aircraft led the lost aircraft to an airport for a safe landing.

Another incident involved a pilot calling any station on an emergency frequency and a reply was made by a Red Bluff, Calif., communicator. The pilot radioed that he was lost and would be forced to land within 10 minutes due to dangerously low fuel. The communicator located the airplane through direction-finding bearings and landmarks visible to the pilot and directed him to a safe landing at Red Bluff at night with gas tanks showing empty.

Not all of our incidents relate to general aviation aircraft. An example of assistance to a military aircraft occurred at a SAC base when a B–47 returned to its base with a defective landing gear and dangerously low on fuel. The base was closed because of a previous accident and no other airport was within range of the B–47. Arrangements were made for a tanker to be vectored to the B–47. Refueling was accomplished, the landing gear difficulty corrected, and a normal landing made by the B–47 when the closed runway became available.

Although we train our people to handle emergency situations, their individual devotion to duty and ingenuity far surpasses that which normally may be expected. I consider the emergency actions of our personnel as a greater tribute to the individual person than to any instructions, directions, or training that we may have given.

In order to fill the need for training for not only emergency situations but for the routine day-to-day activities of our personnel, we are now embarked on a very comprehensive training program aimed at all segments of our controller and communications personnel.

During the past year, FAA conducted an expanded and accelerated training program for air traffic control personnel. The 5,377 new employees hired for air traffic control jobs were all trained in the basic skills of air traffic control, about half of them at our Aeronautical Center at Oklahoma City, the other half at individual operating facilities.

In addition to basic training, courses were given to over 10,000 older employees in the form of advanced on-the-job instruction for technical qualification and proficiency development.

About 1,300 of these employees received courses in radiological monitoring, 150 in automation techniques, and 700 in radar air traffic control; the balance were given upgrade training. Training programs were conducted formally at some 80 air route traffic control centers, airport towers and communications stations, and informally at 600 operating facilities. A measure of this achievement may be seen in a comparison of the number of individual courses administered—15,460—with the total number of personnel—16,500—at the end of the year. Some employees received training in more than one subject, which would of course tend to modify the basis of this comparison, but all in all, it is a training record which will be reflected in significantly better service to the airspace users and of which we are quite proud.

52355—60—pt. 2——3

In the personnel field, also, a revision of the Civil Service Commission classification standards for air traffic control specialists became effective on a national basis in April 1959, resulting in a substantial number of field employees receiving increases in salary ranging from $490 to $1,415. This revision of the standards gives recognition of the vital responsibility inherent in air traffic control work.

Senator MONRONEY. Now on the basis of these revisions, does an air traffic control tower in a busy high density airport receive a distinction in pay measured by the high density of the traffic?

Mr. THOMAS. Yes, sir. One of the principal bases of the new standards is the volume of traffic handled by the facility. The high density location chief is due to receive substantially more than the lower density location chief.

Senator MONRONEY. In other words, there would be greater pay for greater work?

Mr. THOMAS. Yes, sir.

Senator MONRONEY. These men are under very tense conditions oftentimes. During the period when we were considering the FAA Act, the most dramatic testimony we had was that air traffic controllers—these men who saw collisions on radarscopes, or saw two dots approaching on a collision course—were unable to act fast enough with the communications there to get word to either pilot. At that time it seems to me that these men testified that they were on duty 8 hours without a break, as I understood it. They said that they found it better to work straight through because they were familiar with all the traffic that was coming in. They found it impractical, from their dedication to the job, to take a break, a coffee break, or even to leave the tower for an hour of relaxation or time off.

Have you been able to in any way relieve them of that long stretch duty?

Mr. THOMAS. No, sir. Their schedules are still 40 hours a week, 8 hours a day, sometimes with overtime. There are several reasons for it.

One, is that we have required their entire production to keep up to the traffic.

Second, we need to know a great deal more about the work and the work situation before we are in a position to recommend whatever corrections may be necessary.

The third thing is, as you have stated, it is very difficult, impossible in fact, to leave this work in a basket and go out of the room. The airplanes keep moving and they keep running out of fuel, or the fuel supply is diminished. We have to stay with them and it is very difficult to take a lunch hour, so to speak. We do try to rotate them within the facilities so that they are not in any one position too long.

Senator MONRONEY. This would be rotating within the tower itself?

Mr. THOMAS. Oh, yes.

Senator MONRONEY. Do you have anything in mind, just kicking it around as an idea, as to some of these people who are in the terrifically high density areas, such as La Guardia or Midway, for letting them have maybe not just their vacation time off but where maybe they could be given a month or two in a low density traffic area, to refresh themselves before going back to the meat grinder thing?

Mr. THOMAS. We have been involved in some research trying to find out some of these answers. Right now we don't have them. Right now I can't tell you, and I should be able to, how long a man should be able to look at a radar scope. For example at Chicago Midway, that you mentioned, a man takes a relief from the ground control, handling all the aircraft taxiing on the ground, and he goes down to handle instrument operations on radar, and this is quite a relief to him. In some other towers this varies, because the ground control is considered to be one of the easier jobs. At Chicago he practically keeps the mike open all the time.

We would like to know if they can only work 4 hours, 6 hours, or 8 hours. We find a human is a very flexible sort of machine and the people at Chicago seem to be quite proud of it. But we are working with them to see what is more reasonable. I just don't have that information.

Senator MONRONEY. In other words, this is something that the Agency is well aware of, that these men are working up to at least what appears to a layman to be a point of nearing the borderline of human endurance in tenseness, nerves, all because in the average day at one of these busy airports they would have some 50,000 lives or more in their hands. They are more conscious perhaps of that than the people riding in the aircraft itself. For that reason I am glad that the Agency is considering and looking at and studying ways in which some compensation besides a monetary compensation could be achieved, to where these men could have at least an additional time off on an easy station for a breather, even though they were still working.

Mr. QUESADA. Senator, the devotion and dedication of these men, to which should be added some of our people in the flight standards area, to me is almost staggering. I think that there is a genuine requirement for us to do something that would relieve the normal strain on them. They are able to absorb this strain largely by virtue of the dedication to their job. I think it is incumbent upon us to find ways and means of reducing it.

Senator MONRONEY. Let me ask this question in the light of what you said. In addition to the strain and physical endurance, the medical standards must be very high, I am certain, as to eyesight and as to hearing. Has the Agency given consideration to where men who at an advancing period of years are unable to meet these standards which are required on sight or hearing particularly, can be transferred to other jobs of a similar nature within the FAA?

Mr. QUESADA. We have within our own administrative processes imposed on certain personnel the requirement of meeting a class II physical standard, which is quite the same requirement that we impose on the commercial pilot. On some occasions their inability to meet this standard does require reassignment elsewhere where the standard is not required. I personally will look into this to see that justice is provided, and in any cases where we are not giving them due consideration for assignments beyond their physical ability, I assure you it will be corrected. I think this might be a specific program that we could engage in to assure that it is done.

Senator MONRONEY. It seems to me that these men have had so many years, and so many faithful years, that if for lack of eyesight

or depth perception or things of that kind, that certainly an Agency of your size should give preferential treatment for transfers to duties which they could carry without too much loss or no loss in grade or pay.

Mr. QUESADA. There are administrative tasks which we must perform which don't require the physical standard; however, that do require the experience, that they could well perform.

Senator MONRONEY. Before we leave the training, I think one of the functions of this record would be overlooked if we did not have you comment on what we get out of the training program we conduct for the air controllers around the world, with the exception of the Iron Curtain countries and Brazil. I believe most all of these air towermen are trained and given their knowledge of our air traffic control systems through your educational facilities. Thus we get the world on a common air traffic control pattern at a very minor cost. I believe for the purpose of the record you could tell us something of the numbers, if you have them, and the countries that are not included in this.

Mr. THOMAS. Senator, I am somewhat prejudiced on this subject, and I may be a little biased. I think this is one of the finest programs on which the U.S. Government has ever embarked. The results are quite broader than just aviation. We take them, as you know, to our training centers at Oklahoma City for a certain period of time, and then we take them under our wing throughout the United States at our own facilities for a number of months and train them in our ways. Then they go back to their countries and become controllers there. As a result of this, principally, I feel, English is spoken in control towers all over the world.

The procedures used all over the world are principally the ones that are in use here. I think besides the actual aviation viewpoint there is quite a bit of cultural advantage to it.

I can't give you precise numbers now, and I will have to furnish that for the record, and I believe the Administrator will want to add to this.

Mr. QUESADA. It might be interesting to you, Mr. Chairman, for me to quote in substance a conversation I had with a German delegation to ICAO which occurred in San Diego last summer.

He told me that the Lufthansa Co. required their pilots to speak English to each other at all times in the cockpit for the reason that English is such a standard procedure in air traffic management throughout the world, and that our techniques are so commonly accepted that they require their crews to speak English to each other at all times.

It might be interesting to know that in remote Afghanistan, just in the last 2 months, I observed, myself, the construction of an air traffic control school that is quite similar to ours, admittedly smaller, wherein we have our people there helping them, and the objective is to copy our procedures.

It might be also interesting for the chairman to know that in the area of research and development we have completed an agreement with other countries, including England and Canada, and we hope that this will be extended to France and other countries as well, where we have an exchange of personnel so that we can get the ad-

vantages of their research and development program, and they can get the advantages of ours.

If I recall correctly, we have three people from England over here, and we have had at NAFEC for some time some Canadians. I might add that all of the instrument landing procedures that I personally have observed, the British have the best. That is, landing to touch down.

The point I am trying to emphasize is that we don't consider that we alone have a monopoly on the ability to improve aviation facilities.

The British are making available to us, and we to them, any advancement in technology that can bring safety to the public. This is a program that was initiated some 6 months ago and it is now in effect. The people are in fact exchanged.

Senator MONRONEY. Then to wrap it up, am I right, all the world, excepting Iron Curtain countries and Brazil, are on the same general air traffic rules, the general rules of the road you might say?

Mr. THOMAS. Senator, we have a mission to Brazil as well. I am not too familiar with it, not having been there in 3 or 4 years, but I believe their's is substantially the same as ours at present.

Mr. PYLE. Mr. Chairman, I just returned from Brazil. They have the same procedure. The only difference that they have is that they use meters instead of feet.

Senator MONRONEY. Most of the rest of the world still gives it to you in feet?

Mr. PYLE. Yes, sir.

Senator MONRONEY. And most of your calibrations, the various instrumentation, is in feet on most of the world's aircraft isn't it?

Mr. PYLE. I think it wouldn't be too long before they are in feet, too. They have people in Brazil who have just come back from our facility at Oklahoma City and they have a good program going down there.

Senator MONRONEY. Thank you very much for this added information.

Mr. THOMAS. 15. Positive separation.

Under the present air traffic rules, air traffic is divided into two principal categories—aircraft operating in accordance with visual flight rules (VFR), and aircraft flying in accordance with instrument flight rules (IFR). Aircraft flying IFR within control areas are separated from one another by the ground system; aircraft flying VFR are not provided separation from each other or from the IFR traffic. In so-called instrument weather all aircraft operating within control areas are required to abide by the instrument flight rules, and safe separation is thus provided all traffic. In good weather, when aircraft can "see and be seen," pilots may choose which type of flight they wish to conduct, and there is usually a mixture of IFR and VFR traffic which must depend on visual alertness of pilots for avoidance of collision. While the "see and be seen" concept of collision prevention serves quite well at moderate speeds and in the lower levels of the airspace, it is not suited to turbojet operations. The great speeds of the turbojets and limitations of visual capability at high altitudes require more positive methods of separation for these aircraft.

Positive separation is defined as a service to provide air traffic separation to all flights at all times in a given area, regardless of

their mode of operation or of the prevailing weather conditions. The positive control, or separation concept, was first implemented on three transcontinental routes between the altitudes of 17,000 and 22,000 feet, for a period of 1 year ending June 15, 1959. Rulemaking action was taken to extend the positive control regulations for an indefinite period, and this service is still being provided on the specified routes.

In recognition that the present scope and capability of positive control is extremely limited, a project has been undertaken to provide service over a larger area, both geographically and in altitude. This involves the implementation of area positive control, or separation, on an evaluation basis within a radius of approximately 125 miles from our radars at Chicago, Indianapolis, and London—an air defense site in the vicinity of Wright-Patterson Air Force Base—between 24,000 and 35,000 feet. Briefings on this program have been given to all government and industry groups affected, with a very favorable reaction.

Basically, implementation of this plan will establish a radar air traffic control environment wherein both primary and secondary beacon or transponder radar will be utilized to provide identification and separation of aircraft. All aircraft within the established positive control area will operate under the instrument flight rules at an assigned altitude and will be provided separation from all other aircraft in the area. It is recognized that some operations, such as local training activity, acrobatics, flight testing, and certain tactical military operations do not lend themselves to rigid control and cannot, in all cases, be individually separated by the control system. Accordingly, this type of operation will be provided blocks of airspace or segregated areas for operation to the extent possible. Other traffic will be controlled around or through these areas as circumstances permit.

Recruitment and training of additional personnel and the procurement and installation of necessary equipment will require an estimated 10 months, and we have established October 15, 1960, as the implementation date of this plan. If the evaluation results indicate adequate system capacity, we plan to expand area positive separation to include the entire United States at high altitudes as rapidly as personnel and equipment can be obtained. The service will make maximum use of ground long-range radar and the aircraft radar beacon system, enabling controllers to pinpoint the exact position of each aircraft they are controlling. These devices will permit smaller increments of separation and better utilization of the airspace, as well as provide the high degree of safety inherent in the positive separation concept.

As a further extension of this concept, a joint FAA civil military committee has been studying the requirements of present and future supersonic operations. Additional control service must be provided these operations. Initially, we are developing procedures to provide this service for USAF B–58 operations above 40,000 feet in seven operational areas in the southern and southwestern United States. The military services are now collecting data concerning these operations which are required in order to complete this program.

16. Midair collisions: We have reviewed the 27 midair collisions that involved general aviation civil aircraft during the past 2 years—

14 in 1958 and 13 in 1959—to determine if any pattern exists that might indicate further steps we could take to obtain increased safety through air traffic management. Although the exact circumstances relating to each collision were somewhat different, with one exception, the following fundamental similarities stand out:

1. Most collisions were near airports.
2. All collisions were at low altitude.
3. Most collisions occurred in good weather conditions.
4. Either one or both of the aircraft were on no flight plan or on a VFR flight plan.
5. The majority of collisions occurred between aircraft of relatively low speed.
6. Either one or both of the aircraft did not establish communications with the control tower even if a tower was available.

On the basis of our analysis of the accidents, we are now considering requiring two-way radio for aircraft operating within traffic patterns at airports with control towers.

The need for this action is apparent because a controller cannot separate aircraft which have no means and are not required to communicate with the tower and comply with the controller's instructions.

Senator MONRONEY. Let me ask you there, and this is very important: You would not keep two-way radio aircraft from using the air, but they would not be allowed, if they did not have two-way communications, to land at control-tower airports; is that correct?

Mr. THOMAS. That is correct.

Senator MONRONEY. One plane could have the very best two-way and the other none, and it could still lead to collision because you couldn't tell where the non-two-way radio plane was going or where he intended to go?

Mr. THOMAS. That is correct.

Senator MONRONEY. We had, in connection with mid-air collisions, I think three cases that were submitted to us, all involving civilian aircraft and military aircraft. These were small planes and they were apparently, from the testimony as I recall it, flying in joint-use airspace. I believe most of the cases involved National Guard or other nonregular components of the military.

Do you have that list?

Mr. THOMAS. Yes, sir; I do.

Senator MONRONEY. Would you care to comment on those? I think two involved formation flying.

Mr. THOMAS. Senator, I would be very happy to. I do include it later in the testimony.

Senator MONRONEY. Fine.

Mr. THOMAS. Would you care to wait?

Senator MONRONEY. Yes. Go forward.

Mr. THOMAS. Thank you, sir.

17. Military operations: In the decade of 1949 through 1958, 10,686 general aviation aircraft were destroyed and an additional 28,312 general aviation aircraft suffered substantial damage as a result of accidents of all types. In this same decade, there were 100 midair collisions between general aviation aircraft and other general aviation aircraft, 21 collisions between general aviation aircraft and military aircraft, and 12 collisions between general aviation aircraft and air carrier aircraft.

Although any accident is serious, and most are tragic, the adoption of restrictive regulations adverse to military operations would have had a very small effect on the general aviation accident picture. Actually, if all military and air carrier flying had been eliminated completely in this decade, the number of general aviation aircraft destroyed or damaged by accident would have decreased from 38,998 to 38,964, or less than one-tenth of 1 percent. Also, general aviation aircraft collide with each other five times as often as do general aviation and military aircraft.

Section 306 of the Federal Aviation Act requires the Administrator "to give full consideration to the requirements of national defense, and of commercial and general aviation, and to the public right of freedom of transit through the navigable airspace." Therefore, we have to weigh all interests if we proposed rules along the lines some have suggested, that would have the effect of banning routine military operations from the airspace used by general aviation or, conversely, banning general aviation from the airspace used by the military. It is clear that prohibiting certain military aircraft from using civil airports, confining jet operations to restricted areas, prohibition of military formation flying outside of restricted areas, and other similar discriminatory measures would not only do a disservice to the defense of our country, but could not be justified on the basis of facts.

Formation flights: The view has been expressed that formation flying should be banned, or at least banned around airports. It is pointed out that preoccupation of pilots attempting to fly a position on a flight leader detracts from the wing pilot's ability to observe and avoid other traffic.

Although we agree that nonessential formation flying should be eliminated, there are certain types of formation or associated aircraft flying necessary for safety of flight and for military tactics. We have asked the military to define these flights for us and to eliminate any nonessential formation flying.

An example of increased safety through associated aircraft flying is illustrated by the use of a "chase" plane under many circumstances. This practice has distinct and obvious operational advantages when fighter pilots are engaged in practice simulated instrument flights and the preoccupation of the pilot of a single-seat fighter aircraft is such that he cannot adequately observe other traffic. During such flights the pilot of the second fighter aircraft follows and acts as observer to detect any other traffic. This practice, commonly known as a "chase-flight," does assure an adequate degree of vigilance to necessary flight activities that would otherwise have to be conducted with questionable safety.

Incidentally, the attention of your committee was called to three midair collisions involving military aircraft in formation and general aviation aircraft. The Civil Aeronautics Board has not yet determined the causes of these accidents, and therefore we cannot attribute these accidents to any particular cause. However, it seems that it would have been appropriate to point out that one accident occurred in a restricted area in doubtful weather conditions and that the military controller guiding the jets by radar had no knowledge of the civil aircraft through flight plan, radio contact, radar contact or prior

permission. Another of these accidents occurred in a control zone and the FAA controller had no knowledge of the presence of the civil aircraft, but he was in communication with the military aircraft. The remaining accident occurred under similar circumstances, except the collision occurred just outside the limits of the control zone.

In view of the fact that formation flying has been a circumstance in few of the scores of midair collisions during the past 10 years, and in view of other factors, we have not concluded that formation flying, in itself, was the reason for the collisions cited.

Overhead approaches: The view has been advanced also that the "fighterbreak" or "overhead" approach at airports used jointly by civil and military aircraft are unsafe.

The overhead approach is a practice which is common to military fighter aircraft recovery techniques. It is particularly useful in military flight tactics because of its advantages in handling expeditiously a larger volume of fighter aircraft. The overhead approach technique also provides specific safety advantages in case engine failure occurs while the aircraft is in an airport traffic pattern. The reason why the use of an overhead approach pattern by fighter aircraft provides increased safety to other aircraft landing at the joint-use airport is that the fighter aircraft are actually segregated from other slower or less maneuverable aircraft in the conventional traffic pattern. The fighter aircraft follow a tight, circular, overhead approach pattern, while other aircraft fly a normal rectangular pattern outside the fighters.

With this approach a controller is able to handle several aircraft as a unit rather than compounding traffic flow complexities by attempting to sequence these aircraft on an individual basis into various traffic pattern positions. Since, at joint-use airports, there is usually a variance in the airspeeds between fighter aircraft and other airport traffic, it would be patently unwise to mix such aircraft throughout the entire flight pattern around an airport when fighter flights can be handled in an area apart from the flow of conventional aircraft. Additionally, it should be noted that when this type of approach procedure is utilized at a joint-use airport, it is conducted under the authorization and surveillance of the airport traffic control tower. The objective of this requirement is to insure that these flight procedures are not conducted in the airspace of the traffic pattern without the controller's knowledge. Should the controller be aware of other traffic that might conflict, he will not approve the approach.

The Agency has given consideration to all the safety factors involved in the overhead approach techniques, especially at those airports where both civil and military aircraft operations are conducted. We recently obtained the current views of airport traffic controllers with respect to the advantages and disadvantages of this flight procedure. The opinions expressed by our controllers supported and confirmed that the overhead approach technique is actually a flight procedure that promotes the safety of air traffic movements at airports utilized by aircraft with widely varying operational characteristics. It is our finding that fighter overhead landing approach procedures do not constitute a hazard, provided a sufficient degree of control is exercised over all air movements within the airport traffic pattern area.

Senator MONRONEY. Isn't it the custom usually of the controllers to notify any approaching civilian aircraft of the military aircraft in

the area, and to give warning to them that certain jets are ready to approach in this military manner?

Mr. THOMAS. Yes, sir, if we are in comunication with the civil aircraft.

Senator MONRONEY. I have found them to be very careful, to give you any evidence as to when the fighter planes are in there, and if they are ready to make an overhead approach.

Mr. QUESADA. Or, conversely, not to permit the overhead approach to take place if the civilian airplanes are there. It isn't a one-way street, you see. The approval of the military approach in this manner could be denied, though requested, if other aircraft are known to be in the pattern.

Senator MONRONEY. In other words, if the civilian aircraft is cleared the military aircraft can be told to delay the overhead approach.

Mr. QUESADA. That is my point.

Mr. THOMAS. Low-altitude military activity: Without becoming involved in classified material, it is apparent that the avoidance of radar detection, or the avoidance of weapons which employ some line of sight technique for guidance, may be achieved more easily if attacking aircraft operate at low level below the cover of enemy radar. Aircraft operated at higher altitudes may be detected more easily by radar. For this, and other reasons, in October 1957, the Strategic Air Command began at high-priority training program involving low-level navigation flights terminating in simulated radar bomb runs. This program operated on the basis that the aircraft would be flown under visual flight rules, weather conditions, and all appropriate civil air regulations would be followed. The targets selected were generally in the larger areas of population to simulate realistic targets to the degree possible. These operations were conducted under the code name "Pop Up."

This program was deficient from several viewpoints. First of all, the training operation being confined to good weather routes meant that a high percentage of training missions were being canceled due to adverse weather conditions and consequently the time and opportunity for training was lost. Secondly, it was not reasonable that the crews would turn back in adverse weather under actual conditions, and it was necessary to train them in instrument flight if they were to maintain a state of readiness. From an air traffic management viewpoint, the use of heavily populated areas was objectionable inasmuch as these are the areas of highest traffic density and thus the possibility of traffic confliction was increased. Additionally, there was no predictable advance scheduling over any route, precise knowledge of altitudes employed, or other operating details that could be made known effectively to the general public. Finally, and a minor point, the code name "Pop Up" in itself seemed to alarm pilots needlessly as the name suggested an abrupt pull-up over the bomb site, which was not the case at all.

Late in the summer of 1959, SAC presented to the Federal Aviation Agency the requirement that their low level navigation training be conducted on an all weather basis. As a result of this requirement, the FAA and SAC worked together to establish routes in the United States on which SAC low level flights could be made in bad as well as good weather. Prior to activation of these routes, FAA thor-

oughly reviewed the proposed routes to insure that minimum restrictions and hazards to other aviation interests would prevail. In addition, SAC flight checked the routes to make sure that they could be flown safely. In many cases the routes have been altered as a result of these studies. This program, which was given the code name "Oil Burner," established seven initial routes in the United States on which SAC low level flights could be made in bad, as well as good weather. Particular consideration was given and, as necessary, adjustments made to insure—

1. Avoidance of populated areas to the extent possible;
2. That specified route altitudes were in excess of 1,300 feet above the ground in the immediate vicinity of small airports so as to minimize conflict with local traffic patterns;
3. A maximum compatibility of "Oil Burner" operations with all other flight operations; and
4. That a rigidly scheduled basis of route activity was adhered to.

A joint FAA-U.S. Air Force campaign was initiated to publicize and inform the entire aviation industry and the general public of the "Oil Burner" program. Posters, charts, and route descriptions were widely disseminated in areas where the routes exist, and public information releases were distributed through the press, radio, and television media.

Narrative route descriptions, charts, and the scheduled times of "Oil Burner" operations are published on a continuing basis in the Airman's Guide, which contains informative data of interest to all pilots.

Senator MONRONEY. The Airman's Guide is published by the FAA?

Mr. THOMAS. Yes, sir. I have a copy of the routes in an Airman's Guide here, if it is of interest. It is a publication where all information of this type is contained.

Similar information also appears in various other publications available to aircraft operators. In addition to this published information, notice of "Oil Burner" activity is broadcast by FAA air traffic communications stations.

"Oil Burner" is a continuing program, with all phases of operation being monitored carefully by the FAA to insure safety. It is a good example of cooperation between the military services and FAA wherein the vital requirements of defense are being met and, at the same time, every possible consideration is given to the safety and welfare of other segments of aviation.

We have also received complaints on the flight of a B–58 from Fort Worth, Tex., to Edwards Air Force Base, Calif., made on September 18, 1959, and one or more B–66 flights made near Dayton late in December of last year. Both of these flights were made by civilian personnel who were engaged in certain specific tests for the Air Force in furtherance of low level missions of the Air Force. The B–58 flight was made without the prior knowledge of the FAA, but the low altitude portion was conducted at subsonic speeds and in accordance with current civil air regulations. The B–66 flights were made in connection with structural research at low altitude over various terrain conditions under varying climatic conditions. The operator made every effort to give notice to the public beyond any legal requirement

to do so. We in Washington learned of the details of these flights only recently.

We have no question of the importance of these flights to the defense effort and, for that matter, to civil aviation as much will be learned about turbulence, structural strains of low level operation, and other design factors which can be applied to all aircraft. At the same time, we recognize that random, uncoordinated low altitude, high speed operation is not acceptable although there is currently no rule to prohibit it.

We cannot defend these flights, even though they violated no Civil Air Regulations, and neither can we defend our action in issuing waivers for virtually unrestricted operation of high speed low altitude flights.

In consideration of these facts, there are several courses of action available to us. These are:

1. Work out best possible routings, without restricting anyone unnecessarily, and publicize the operations to the maximum extent. This was done in the case of "Oil Burner."

2. Adopt a rule that would stop these flights. To do so would negate a large portion of our defense effort.

3. Confine these flights to restricted areas. There are insufficient restricted areas of a size large enough and with terrain and weather varied enough to accommodate all of this type of training and research.

4. Create new restricted areas for this purpose. This act would embrace needless thousands of square miles of airspace in the restricted category.

5. Adopt a maximum speed limit below certain altitudes. We are considering this action, but the flights in question may have to operate at higher speeds—on a waiver of the rule—and thereby would not be affected by the rule. However, flights operating on a waiver could be closely controlled and publicized.

At the moment we consider the courses of action looking to maximum publicity and notification and the adoption of a speed limit as the most promising solutions.

Senator MONRONEY. In that connection, in the exemption given in the act, exemption for military emergencies, the act reads strongly that the military authority must ask for the waiver. In other words, the contractor, although he may be acting on behalf of the contract, is not given any exemption under the act unless the military choose to sponsor him.

Mr. THOMAS. In the case of the B–66 flights the military did ask for the waiver on behalf of the operator. We have terminated the waiver. We are restudying it now. If it is given, it will be given on the basis of military necessity, through the military.

Senator MONRONEY. Are you convinced that you couldn't conduct a test at least comparable to this low level over parts of the ocean? I realize there is some very definite information which will be learned over terrain through turbulence and thermals and such which come up through changing conditions on land which you wouldn't have over the sea. But these do present a very difficult problem for you in air traffic management, I would think, to have someone buzzing twice the speed of sound at 500 feet above the ground.

Mr. THOMAS. Sir, some of them are conducted over the ocean. Most of them are conducted within the Edwards Air Force Base area, which is a restricted area. There they are conducted at speeds up to 500 knots. They are not conducted at these speeds outside of the restricted area.

The problem gets to be this: they are looking for the flight over farm land, and looking for flight over highways, wooded areas, and plowed land. They are looking for flights in wintertime and summertime. They are looking for flights over hills, across rivers, so they can get the varying effect of turbulence. What we are working out with them now is to see how much we can put into restricted areas, how much into warning areas. Any needs which cannot be met on this basis we feel could be met, if they are widely publicized and everyone knew they were going to make the flight at a certain time. I think the problem has been the surprise element of the flights and people find out about them by reading of them in the newspapers.

Senator MONRONEY. In other words, if you would give notice that on a certain day at a certain hour the flight would be made, clearly showing the route, then you would have general aviation and airlines properly on notice that there is no other way to conduct the test and therefore it was one of the penalties we would have to pay for efficiency in our air defense activities, is that correct?

Mr. THOMAS. Yes, sir. This is the way we look at it. If it is closely controlled, as much as possible within a restricted area, and the other well publicized, we think it can be handled.

Mr. QUESADA. But as you say, Mr. Chairman, publicizing it as an essential resort to which we must always go when it is established as necessary.

Mr. THOMAS. 18. Future programs: Notwithstanding the accomplishments thus far in air traffic management, we know there is a vast amount of work to be done in the areas of rules, procedures, and operations. We have a comprehensive work program which will bring increasing safety and efficiency in our operations.

Our work program includes such things as: simplification of clearances; more effective use of radar; simplified departure routes; more segregation between controlled and uncontrolled flights by providing higher floors to control areas; better definition of and adherence to traffic patterns; more service as automation is introduced; and more use of available military facilities. Of course, there are many other areas of potential improvement and we seek new ideas eagerly from within and outside of the Federal Aviation Agency.

That completes our prepared testimony, sir.

Senator MONRONEY. Thank you very much, Mr. Thomas, for a very complete, comprehensive, and informative statement.

Your authority terminates as the plane gets on the final approach for a landing?

Mr. THOMAS. No, sir.

Senator MONRONEY. Is the high-intensity lighting service then under your jurisdiction or the Airport Construction Branch?

Mr. THOMAS. The high-intensity approach lights are under Bureau of Facilities and Materiel, within the FAA.

Senator MONRONEY. Within the FAA but not within your cognizance?

Mr. THOMAS. No, sir.

Senator MONRONEY. You will have, I presume, at some point in the hearings, a discussion on this subject—the bottlenecks that have held us back on this program. While it is considered an air navigation facility it comes under the general part of the facility; is that right?

Mr. THOMAS. Yes, sir.

Mr. QUESADA. We can tell you what the program is right now.

Senator MONRONEY. I think it would be good to have it, and what you could do to prevent delay on the part of the airports in accepting these installations.

Mr. TIPPETS. I am Mr. Tippets, Director of the Bureau of Facilities and Materiel.

We have now authorized by the Congress 157 high-intensity approach light lanes, of which 102 are operative as of December 31 of last year. The other 55 are moving ahead with fairly swift pace. The only bottleneck we really have is in some areas the communities have difficulty making available to us the property off the airport which permits the installation of these lights.

As you know, the lights are a series of 100-foot separated high-intensity sealed beam lights that run for a distance of some 3,000 feet beyond the end of the runway. We do have authorized 157.

You will be interested, too, to know that we now have underway a very agressive program to add to these lights the so-called sequence flashing lights. You have observed at some of the larger airports the high-intensity light that operates flashing lights almost instantaneously. These fixtures are spaced every 100 feet on the approach light lane. These give you the instantaneous effect of watching the light move rapidly toward the end of the runway. They have 10 million candlepower at their peak light. We intend to put these fixtures on all of the high-intensity approach light lanes.

We are moving ahead very fast on this program.

Senator MONRONEY. Do you have enough money to cover your Federal costs on these programs?

Mr. TIPPETS. On the approach light lanes, yes, sir; we do.

Senator MONRONEY. Do these have to wait for ILS before they are put in, or do you put these in sometimes while you still can't get your equipment for ILS?

Mr. TIPPETS. These are all installed in connection with ILS. It so happens that we have more ILS at the moment than we have authorized approach light ranges. The ILS is not a particular problem.

Senator MONRONEY. It is not a question of the equipment being delayed or being difficult to get, is it? It is a question of getting the right-of-way, of getting the easements.

Mr. TIPPETS. Yes, sir. We have had delays in getting equipment. Not delays, but it takes a little time to manufacture this equipment.

Senator MONRONEY. It is not a difficult thing like radar?

Mr. TIPPETS. No, sir. I think we have some 10 to 15 sets now tied up in land problems, that we are unable to go ahead and install.

Senator MONRONEY. Would this include Midway?

Mr. TIPPETS. I can't answer that without checking.

Senator MONRONEY. I think it is time to crack down on local airports, if there are any—and I presume there are—that have just sat

on a dime and haven't moved at all. This thing, I think, has reached a point, and all the testimony for years before this committee has indicated this vital need, and yet because the airport commission, the city commission or the mayor has jurisdiction of the airport, all of the millions of dollars we spend on electronic aids to put that plane on its final approach pattern is negated or at least diminished greatly because of a simple thing like electric lights to guide the plane into its final touchdown.

I think it is time to get hard boiled and say, "You are either going to put these in or we are going to close these runways." I think by the time a few of them have been closed, and traffic diverted that you will get some action.

It is a difficult thing, I know, but we cannot compromise with air safety. Delay in this field I think is inexcusable. I think all we have to do is condemn the land and make these easements for this 3,000 feet possible.

Mr. QUESADA. Mr. Chairman, I think it is appropriate to make clear some confusion to the past record, to which we contributed.

The approach lights are a function of the Federal Government 100 percent. It is a navigation aid.

Senator MONRONEY. The cost of it?

Mr. QUESADA. The cost of it. We buy them and install them. But the community must provide us with the easement. It is that area where we often run into delays that you find objectionable and that we find objectionable.

I am inclined to agree with you one hundred percent; if the community cannot give us the easement we will have no alternative but to deprive the community of the use of the runways.

Senator MONRONEY. I am glad to hear you say that, because I think this thing, year after year after year, is the major hazard—that last approach. This is where a high percentage of accidents occur. Sometimes it is attributed to weather, sometimes to pilot error.

Here, as Mr. Bakke testified the other day, it is vital to have that pattern of lights out there—particularly in a standardized way. If an airline pilot has to accommodate himself to 3 or 4 different systems, or 10 or 12, then it makes adjustment rather hard, particularly if you are facing a difficult weather situation, wind conditions or such.

I certainly hope that you will put this up high on your list. And if you need any more funds for these lights, I think you will find the Congress willing and insistent on giving you whatever is necessary.

The runway lighting at this dark hole where the wheels touch the runway, whose jurisdiction is that?

Mr. TIPPETS. That is the city's, sir. They install all of the lights on the runway, under the present setup.

Senator MONRONEY. We pay 75 percent, I believe, of that cost, do we not, and the city 25?

Mr. TIPPETS. We contribute in the Federal aid to airport program for all of the safety items, and the lights would be included in the runway and other safety features.

Senator MONRONEY. As I understand it, the lighting at the south end of Washington National, the fluorescent lighting which gives the pilot the brightly lighted touchdown point, is on most airports nonexistent. This has been tested rather thoroughly, hasn't it? Most

of the pilots I have talked to feel that eliminating this dark hole, where the wheels must hit, is a very, very useful safety feature.

Mr. TIPPETS. Mr. Chairman, this is not yet a standard lighting facility. We are doing a lot of testing work at Atlantic City on lights. Mr. Anast can tell what we are doing in this very area.

Mr. ANAST. My name is James L. Anast. I am the Director of the Bureau of Research and Development.

We have at our national aviation facility, the experimental center, under test right now, various lighting systems for the runway lighting, including the lights, known as the MC–2 runway lights, and a pancake light which has been under development by the Bureau of Research and Development.

This also includes the flush runway lighting. We have embarked on an evaluation program to extend over the coming year to gather data on the value of these particular kinds of lights.

Senator MONRONEY. And this, now, is distinct from the approach lighting—it is the lights on the runway itself, including the touchdown point and runup?

Mr. ANAST. Yes, sir; that is correct.

Mr. QUESADA. We are fairly convinced that we can, as a result of this program, bring a significant contribution and improvement in this area, and with considerably less expense than heretofore we thought was essential.

Mr. PYLE. I might add to this point, Mr. Chairman, because this I consider, as you do, an extremely important part of the whole program. I think the most important thing is to be sure we end up with the right result. We could rush into something and find it doesn't meet the requirement, and I think we would do a disservice to the pilot in the cause of safety.

This is a very, very delicate situation and we must come up with the right answer. This is why the program for which Mr. Anast is responsible is such an important one. We also welcome the assistance of any aviation groups, and have so indicated to them, to come over there and participate with us in the Atlantic City tests on the evaluation of these various systems.

Senator MONRONEY. We had testimony earlier, I believe, from the airline pilots, that for years the military, the Air Force, conducted a long series of tests on runway lighting and approach lighting in Maine.

Mr. PYLE. Dow Air Force Base in Maine.

Senator MONRONEY. Are you engaged in retesting all of this, or trying to discover new, more modern and more efficient lighting facilities?

Mr. ANAST. No, sir. We are evaluating under the same conditions various competing lighting systems in order to gather data on which one could base a realistic selection in the future. There are some lighting systems which have not been tested before. I refer specifically to one, the pancake lighting system.

Senator MONRONEY. How long will the testing period have to go on before you can give a green light?

Mr. ANAST. We are conducting this program in the entire next 12 months. However, the bulk of it will have been finished by July 1, and there will be pilots, aircrew, rather, from the military and from

all civil aviation organized groups, who will participate as project pilots in this evaluation.

Mr. QUESADA. Mr. Chairman, there seems to be some impression conveyed that the system at Dow has been accepted as the standard system. That is not so. That has never been accepted as the standard system.

At Atlantic City on a single runway we have installed, under conditions that are thorough and complete, each of these competing systems. Under any given circumstance, such as a 200-foot ceiling, all three of these systems can be measured each against the other. There is no standard system accepted at this moment. The Air Force has developed a system, but it has not been accepted as standard except by them.

Senator MONRONEY. You are testing the system which the Air Force has developed against the newer systems which others have developed?

Mr. QUESADA. That is correct.

Senator MONRONEY. And then you expect to have an evaluation by July 1?

Mr. ANAST. Yes, sir. We hope to have significant results by July 1.

Senator MONRONEY. Providing you get enough bad weather. That is something that can't be created.

Mr. ANAST. We do create it sometimes by smoke generators if we can't find enough bad weather.

Mr. QUESADA. Each of these systems is on the runway, and each can be tested under identical conditions, and measured and recorded.

Mr. ANAST. May I add one more thing, Senator.

It is possible for all the civil jet aircraft, under certain loading conditions, to actually participate in landing and takeoff operations at NAFEC.

Senator MONRONEY. We are talking about the testing of the runway lighting as distinguished from the approach lighting.

Mr. ANAST. Yes, sir.

Senator MONRONEY. You are satisfied that the runway lighting is satisfactory, so that we can get our installations in?

Mr. PYLE. I want to be sure this is straight in the record. The approach lighting standard has been established, and I would like to say that if it had not been for the dedicated work of some members of the Air Line Pilots Association this would have dragged on. But they, together with the Civil Aeronautics Administration, and the military, got together and we finally got this one straightened out. It was too long in getting done.

Now we have the standard approach light configuration which all agree—military, commercial, and ourselves—is the proper way to do the job.

Senator MONRONEY. Are there any other suggestions you would like to make? Again, I think this has been a very constructive statement and one which will be very helpful to the committee in consideration of your needs and your problems.

Mr. QUESADA. Mr. Chairman, would you like to see a map of these high-altitude jet routes, just to indicate the magnitude of it? It is rather impressive, I think.

Mr. THOMAS. Sir, the purple dots are the military facilities where we have FAA personnel stationed to provide the service to the civil

jets. The orange dots are the FAA locations where we provide the same service. As a matter of interest, there are 38 military locations and 11 of the FAA locations.

You can see that we are now providing quite a dense network in the East that narrows into a band going into the west coast, and we are working night and day to expand that. There is a little over 25,000 miles of routes.

Senator MONRONEY. I believe when General Quesada testified the other day he said there were some gaps still in the system because of mountainous terrain and difficulty in locating adequate radar positions to completely reflect the area they are supposed to cover.

Mr. THOMAS. I don't know if you can see this, but the yellow or light line here indicates the gaps where we have no radar coverage at the present time, and we are providing, in effect, positive control for the jet routes across those routes.

Senator MONRONEY. That span is not covered by radar and you go under positive control, altitude and distance separation?

Mr. THOMAS. That is correct.

Senator MONRONEY. So they are not under VFR under any conditions?

Mr. THOMAS. I might suggest, if we have time, to show the refueling areas, also.

Mr. QUESADA. Before leaving this, really what we are trying to do, as fast as the airlines put their schedules in, we attempt to provide this service.

Senator MONRONEY. I think that has been a rather fantastic accomplishment because these jet routes literally expanded by magic from the time production began to pick up of the 707's and DC–8's. You were ready on each route, I believe, up to the time of the inaugural flight, practically, to take care of radar monitoring.

Mr. QUESADA. I think that is generally the case; yes, sir.

Mr. THOMAS. It has only been by minutes on some routes, though.

Senator MONRONEY. Are you having trouble getting your men trained or were they pretty well ready when the equipment got here?

Mr. THOMAS. We have the men trained. The more people you have trained, the easier it is to get additional ones. I think we have broken the hump of the training problem.

Mr. QUESADA. I think it is necessary again, if I may, to pay tribute to the controllers. This required, in many cases, the individuals to leave their homes, and with short notice, to go to extremely remote areas where the Military Establishment has these locations, and they had to go to them. Again, it is a tribute to their devotion.

Mr. THOMAS. We mentioned refueling areas. These were the formalized refueling areas when we started working. There are 68 combinations on here. They are different tracks. Some of them are small circular ones, others quite large. These generally are 300 miles in length, to give you an idea of the size.

In working with the military in reducing those, we came down to 25 refueling areas which are being used on a scheduled basis rather than a random basis. They are alined to the degree possible to provide the least conflict with the civil users, particularly the jets, but not in all cases because there are other things that determine their alinement.

I think this is perhaps as dramatic an example as we have of the cooperation of the military and civil to make more airspace available for all people and make better utilization of it.

Senator MONRONEY. All military refueling now will take place in these areas unless otherwise noticed and publicized?

Mr. THOMAS. Yes, sir; all at high altitude. This is above 24,000 feet. We are now working on the low altitudes.

Senator MONRONEY. You have not cleared out the low altitude refueling?

Mr. THOMAS. No, sir. This is just the high.

Senator MONRONEY. Most of the refueling now is done at high altitudes as you replace the KC–97 with the KC–135?

Mr. THOMAS. This is the KC–135. The KC–97 and KB–50 refueling is done beneath this. But we are both reducing and regularizing the refueling areas. I think it will be much better when we get through with that program.

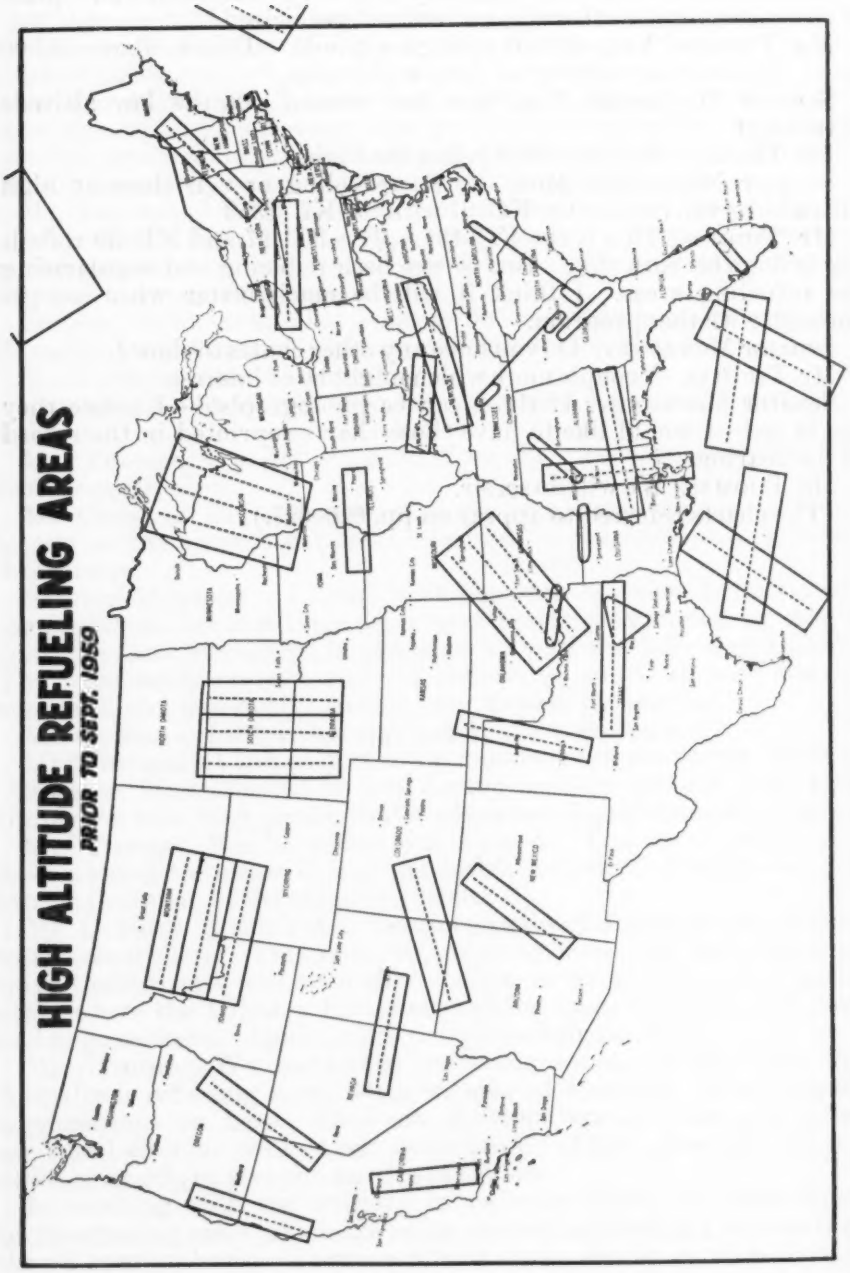
Senator MONRONEY. Do you have any other charts to show?

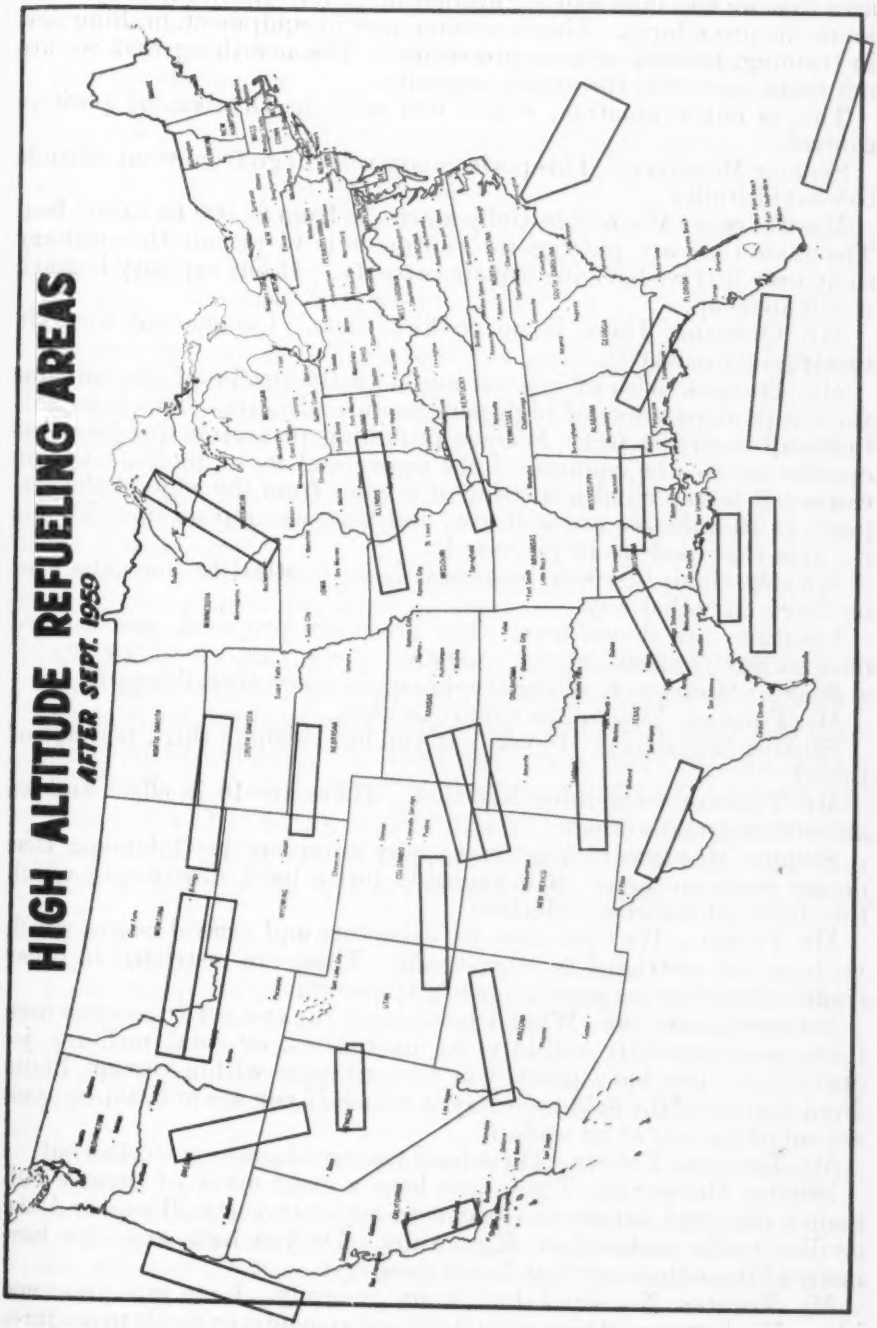
Mr. THOMAS. A couple more which might be of interest.

Senator MONRONEY. If those can be photographed—I notice they are in red—I would like to have those charts reprinted in the record of the hearings.

Mr. THOMAS. We will do so, sir.

(The charts referred to appear on pp. 626–627.)


HIGH ALTITUDE REFUELING AREAS
PRIOR TO SEPT. 1959


HIGH ALTITUDE REFUELING AREAS
AFTER SEPT. 1959

Mr. THOMAS. We mentioned the positive control experiment. Here is Chicago, Indianapolis, Pittsburgh, Detroit. This is roughly the area that we will take into our evaluation of the system capacity. We know the procedures. This is nothing new in equipment, nothing new in training, nothing new in procedures. The one thing that we are not quite sure of is the system capacity.

This is our evaluation, which will start in October, of positive control.

Senator MONRONEY. This positive control will go from what altitude to what altitude?

Mr. THOMAS. We will initially start out from 24,000 to 35,000 feet. The reason we are putting the top on it is to permit the military to fly over it if we have inadequate capacity. If our capacity is good, it will go on up.

Mr. QUESADA. There is no conflict there. Commercial aircraft rarely go above 35,000.

Mr. THOMAS. Also of interest might be the profile of the corridor for the jet departures of high-performance aircraft. This is in altitudes up to 27,000 feet. We are providing protection for jets that operate within the confines of the upper and lower limits. As you can see, it is step climbs, starting at 5 miles from the edge of the airport; at 10 miles we are still low, and then we step on up. This is the area that needs to be protected.

We step-climb this way because it is impractical to show the area on charts any other way.

Locations are shown here. The green are proposed, and the red ones are now in effect.

Senator MONRONEY. These are the corridors we are talking of?

Mr. THOMAS. Yes, sir, the climb corridors.

Senator MONRONEY. It looks like you have about a third perhaps of those?

Mr. THOMAS. Something like that. There are 16 in effect and we are working on the others.

Senator MONRONEY. You have many corridors in Oklahoma that do not show up there. It is probably just a local situation to which they have made accommodations.

Mr. THOMAS. We have some jet departure and arrival routes which we have not restricted to other traffic. These are restricted to other traffic unless they get permission to go through.

Senator MONRONEY. What I mean is off the ends of runways where there are frequently military jet operations, or total military jet operations, they have given you free airspace within certain limits from the end of the field each way in which if you are at 3,000 feet you are out of the way of jet traffic?

Mr. THOMAS. Yes, sir. These local patterns have been worked out.

Senator MONRONEY. There have been a great many of those which hadn't occurred before you began to separate the military and the civilian traffic under these flight rules. Do you have any idea how many of those there are that do not show up?

Mr. THOMAS. No, sir; I don't know precisely. I can give you some idea. We have something over 2,000 instrument approach procedures approved, and we have something over 40,000 various air-traffic-control procedures of this type worked out. So it is quite a large number.

Senator MONRONEY. This has added to air safety because you no longer have random flying across airways with military aircraft when they are coming in for a landing. This Las Vegas situation, I don't see anything there that you show; but I know——

Mr. THOMAS. We changed the penetration for Las Vegas.

Senator MONRONEY. These are examples of what has been done?

Mr. THOMAS. Yes, sir.

Senator MONRONEY. You cannot run red lights across airways at certain altitudes?

Mr. THOMAS. Yes, sir, this is correct.

Senator MONRONEY. Is there anything further that you have, General Quesada.

Mr. QUESADA. No, sir.

Senator MONRONEY. Mr. Pyle?

Mr. PYLE. No, sir.

Senator MONRONEY. Thank you very much for a very instructive, informative, and helpful statement.

Senator MONRONEY. We are honored to have the Honorable Philip B. Taylor, Assistant Secretary of the Air Force for Materiel, with us. We are breaking into the testimony by the FAA and we will resume that when Mr. Taylor has completed his testimony. He will not be available tomorrow, consequently we thought it wise to hear his testimony at this time.

You may proceed in any way you wish, Mr. Secretary. We appreciate very much your giving us this time.

**STATEMENT OF PHILIP B. TAYLOR, ASSISTANT SECRETARY OF THE AIR FORCE FOR MATERIEL; ACCOMPANIED BY JOHN B. MACAULEY, DEPUTY DIRECTOR OF RESEARCH AND DEVELOPMENT, DEPARTMENT OF DEFENSE, THE DEPUTY CHAIRMAN; EDWARD A. BACON, DEPUTY ASSISTANT SECRETARY OF THE ARMY FOR FINANCIAL MANAGEMENT; REAR ADM. C. S. COOPER, ASSISTANT CHIEF OF NAVAL OPERATIONS FOR AIR; AND MAJ. GEN. M. A. PRESTON, DIRECTOR OF OPERATIONS, U.S. AIR FORCE**

Mr. TAYLOR. Thank you.

I would like to read the statement, Mr. Chairman.

I am Philip B. Taylor, the Assistant Secretary of the Air Force for Materiel. I am here in my capacity as the designee of the Secretary of Defense to deal with matters of joint concern to the military, the Federal Aviation Agency and the civil aviation interests. In discharging this duty I am assisted by a committee of which I am chairman.

I would like at this time to introduce the members of this committee, or their delegates.

Mr. John B. Macauley, Deputy Director of Research and Development, Department of Defense, the Deputy Chairman.

Mr. Edward A. Bacon, Deputy Assistant Secretary of the Army for Financial Management.

Rear Adm. C. S. Cooper, Assistant Chief of Naval Operations for Air, and Maj. Gen. M. A. Preston, Director of Operations, USAF.

In this capacity as the representative of the Department of Defense, I would like to thank you and this committee for the privilege of ex-

pressing our views with respect to the Federal Aviation Act of 1958. The Department sincerely appreciates the keen interest of your committee in aviation matters. I hope that my remarks will be of some assistance in your constructive efforts toward providing a sound legislative basis for increased safety and effectiveness in this dynamic business.

As this informed group is well aware, the Department of Defense actively supported the legislation now under review. I am happy to report that a careful evaluation of the first year of operations since the Federal Aviation Act became effective has confirmed our initial conviction that the philosophy upon which the law is predicated is sound.

I am sure that you do not expect testimony to the effect that we have experienced no difficulty during this transition period. It is readily apparent that a number of the provisions of the act both directly and indirectly affect a wide variety of sometimes complex military air operations. Not only did the act itself require basic changes in the scope and seat of authority, but the intent of the act resulted in changes in emphasis on certain functional areas. It is perhaps not surprising, therefore, that a year's operation has proved inadequate for complete evaluation of the implementation of the law on military operations. The Department of Defense has, however, had sufficient experience to enable me to state that up to the present we have had no difficulty with the provisions of the law itself.

With the expectation that the committee is interested in hearing from me comments on the military aspects of progress in the areas encompassed by the Federal Aviation Act, I would like to report briefly on a few examples of our activities in this field.

We have undertaken, and virtually completed a program to mark a large number of our aircraft with a conspicuity-type paint as an aid in preventing midair collisions. We believe that this is one of the important factors in the reduction of this type of tragedy during the past year.

Of the total of 55 radar approach control facilities established by the military services, 29 have been, or are shortly to be, transferred to the control of the FAA, for operation either solely by their personnel or jointly by the FAA and the military. These 29 facilities are located in areas of high volume, mixed civil and military air operations. The objective of the transfer was to place the operation of these centers under a single agency in order to assure unified control of the complex areas involved. A continuing program is underway to similarly transfer additional facilities of this type in the near future.

The services have offered training facilities to personnel from both governmental and civil agencies, and have actually furnished training to members of the FAA, notably in jet and helicopter operations. In several instances, the joint use of military airfields has been authorized for civil jet training operations.

On both a temporary and extended basis, we have loaned aircraft to the FAA for administrative, logistic, experimental, and test purposes.

Each of the services conducted a searching reevaluation of its requirements for military restricted airspace areas and as a result of

these studies we were able to release to FAA over 9,000 square miles of airspace. We will continue our established practice of submitting coordinated service reviews of all requirements for special use airspace to the FAA for appropriate action.

I believe that the cooperation between the military and the FAA in the use of the air defense radar for continuous surveillance of civil jet carriers along high altitude jet routes is fairly well known. You have also heard that all military aircraft display a radar beacon at any time they are in proximity to these routes or, lacking this capability, they must obtain specific clearance to cross the boundaries of the routes.

Finally, we believe that the personnel detailed for duty with the FAA, in accordance with provisions of the law, have contributed to the overall effectiveness of air traffic control. A special effort was made to select the officers most highly qualified to fill the requirements of the FAA. We have received a number of favorable reports on their performance. At this early date, however, we have been unable to assess the long-range benefits that your committee envisaged would accrue from the input of military experience in the field of air operations and traffic control.

In the field of air traffic control, the Department of Defense is well satisfied with the manner in which military requirements for special service for specific maneuvers and training exercises have been met. We have, in all cases, received prompt attention and exemplary cooperation from Mr. Quesada and his staff in preparing for and executing these vital and often complex operations.

It is a fact, however, that the necessity for making special provisions for these operations represents an outstanding problem, the solution to which has been slow. It is understandable that the traffic control system has been oriented principally toward providing maximum safety for passenger traffic between transportation hubs and that this orientation does not lend itself to maximum flexibility for military training operations. Mr. Quesada has previously testified that an increasing volume of civil jet operations is now taking place at altitudes previously used almost exclusively by military aircraft. Considering the speeds at which these aircraft operate, coupled with the time and altitude separation criteria, it is evident that extremely large blocks of airspace are required for each individual aircraft. In the case of supersonic aircraft these blocks are truly enormous. The growing tax on the capacity of the air traffic control system is consequently a matter of much concern. As this committee is undoubtedly aware, civil jet carriers are required to operate at specified or so-called hard altitudes. For safety's sake, this concept is also highly desirable for most military operations. Nevertheless, despite some success as a result of the combined efforts of the FAA and the military services to increase IFR traffic on this hard-altitude basis, a recent survey disclosed that about 45 percent of all military traffic must accept a VFR or VFR on-top clearance in order to operate.

In some cases, training operations are almost incompatible with the present air traffic control system. An example is celestial navigation training. In essence, the navigator undergoing his initial training in this phase of operations can be expected frequently to exceed the errors allowable in the air traffic control system. The crew is thus often

unable to conform to the flight plan originally submitted, with either consequent disruptions to traffic or failure to complete its assigned mission.

These representative examples of problem areas are perhaps only indicative of what may be a basic problem. For the present and for the near future, the four-dimensional aerial highway appears to be necessary for practical and safe separation of aircraft. Unfortunately, the number of these airways is increasing to a point where there is simply no available airspace in which to conduct local training operations, low and higher level en route operations, ordnance firing and bombing, and other types of training vital to the military services.

I can report that there has been considerable cooperation between the FAA and the Department of Defense in developing means to accommodate these operations. In our view, the most promising solutions envisage the increased use of radar, and we hope that the programs initiated by the FAA can be implemented rapidly.

It is not my objective to criticize the FAA as it is unreasonable to expect sudden solutions to the long outstanding problems in this field. I do hope by these comments to illustrate that operations which conflict with the activities of other aviation agencies are conducted only because the services have well-founded training requirements. I assure this committee that safe separation from other aircraft is our first consideration in planning and conducting such operations. Normally, therefore, the services widely disseminate information concerning intended deviations from normal traffic control procedures. This sometimes opens the way to criticism and suggestions for restrictive regulatory action which we regard as unwarranted.

In conclusion, I would like to reaffirm our confidence in the fundamentally sound philosophy which is the basis of the legislation under review. I cannot say that all military requirements are yet fully satisfied. In all fairness, however, I must add that the increased tempo and volume of air operations have correspondingly magnified problems which legislation itself cannot be expected to solve. We are fully confident nonetheless, that within the sound framework of the act, continued cooperation between the FAA, the Department of Defense, and other segments of national aviation will result in an extension of the progress made during the past year.

We assure you that we will make every effort to progress as dynamically as the expansion of the industry requires.

Senator MONRONEY. Thank you very much, Mr. Secretary. We appreciate your statement. Beyond that we appreciate the cooperation that has been shown in working out these problems to mutual advantage.

It seems to me, I might say, since military aviation occupies nearly one-half of the airspace in landing and taking off, and use of space, and civilians the other half, that we have been like two families living in one house.

We have got to get along. Certainly since the passage of the FAA Act we have been talking with one another in arranging mutual use of the driveways and approaches to the house so that everybody is beginning to make an accommodation to the needs of the other and the ultimate safety of both families that are using that space for the air travel.

Oftentimes in studies like this we are inclined to accent the negative and forget all about the positive. I think the short year that we have had under FAA and its cooperative joint responsibility with the military has marked a great deal of progress, as you have stated so well in your statement.

I was just jotting down some of these. I wonder if you would agree that perhaps the No. 1 thing that has been achieved has been a uniform set of air traffic rules so that both civilian and military generally are flying under the same common traffic code.

Mr. TAYLOR. It seems that that is an absolute essential because we are using the same airspace. If we don't agree on the rules, we certainly can't agree on procedures and so forth. So I think that is a very definite piece of progress that has been made.

Senator MONRONEY. Aside from your extraordinary special military maneuvers, routine military flying, this has been accomplished with very little disruption to your military needs and I think to the great advantage of our own civilian needs, would you not agree?

Mr. TAYLOR. I would.

Senator MONRONEY. I would put that as the No. 1 achievement of the year. I think the sharing of the airspace that you have made possible—I think you have said 9,000 square miles already—and other yielding of military space to joint use and to use in which at certain times of the day it was open to complete civilian and at other times perhaps to military—has enlarged even beyond that 9,000 square miles.

I think your base commanders, who have worked out procedures for corridors, is a third yield that we have without being forced to do so. In many military airports they have worked out approach procedures to go under the civilian air traffic. So long as you are 3,000 feet above within a certain area on takeoff or landing zones, defined by clearly discernible land markers which pilots are all familiar with, you have created a separation of traffic there which has also been magnified many, many times.

These things are not spectacular but they are certainly vital to the private plane operator as well as to the airlines to know that as long as they are 3,000 feet or above and in certain proximity to the airports they are not going to be crossing jet landing traffic or other high performance aircraft traffic.

These things I think are all not spectacular but represent a very definite progress.

On the technical side, the exchange of use of military radar and military facilities, approach radar, long-range surveillance, has given us tens of millions of dollars worth of equipment for joint use instead of only the use in limited early warning or warning systems of aircraft.

In the exchange of operating experience, which I understand goes on, you have had 10 or 20 times as much experience in jet operations as the civilian branch of the industry has, yet I understand that has been made available to the civilian agency as well, has it not?

Mr. TAYLOR. Yes.

Senator MONRONEY. And their use of training personnel, in which you have trained both the mechanical and the air inspectors on your KC–135's? We would have been unable at any price to provide this training had it not been for military cooperation.

I mentioned the military network on radar. Even to the point of interchange of problems in aerial medicine, I understand your groups are working now in close connection with the civilian medical branch of the FAA, are they not?

Mr. TAYLOR. Yes.

Senator MONRONEY. And you have had of course many more years of high-altitude flying and its reaction on pilots and crews than we have had under civilian operation.

So I would say that those things are all strongly on the plus side and would not have been possible to any large degree had it not been for the cooperation and formal association in the area of joint use of airspace.

There are one or two things which have been mentioned during the testimony. Actually two that I recall. One was apparently a problem that some of the airline pilots have discovered at high altitude flying where, in order to be identified on the military scopes or on the radar surveillance, there have been some reports that the radar watchers who were scanning the screen did not see the approach of high-performance aircraft in that same altitude.

They lead us to believe that while the civilian planes were well equipped with operational transponders so that they could be easily detected, that sometimes some of the military planes, perhaps because they had no local field apparatus capable of testing whether their transponders were working or not, were flying without these being operative.

I wonder if you have any comment on that. This is one of the things that seems could easily be corrected if some attention or testing of these were possible.

Mr. TAYLOR. I would like to have General Preston comment on that.

General PRESTON. Mr. Chairman, our rule is that our planes, our crews, will not cross these airways unless one of two conditions is met. First, that the transponder is turned on and operating and lacking that, or lacking a transponder, that a clearance to cross the airway has first been obtained.

I believe that we have indications or reports of two instances which appeared to indicate a violation of this rule. We have run down one of the instances and we have a report that the transponder was turned on. The other one we are in the process of investigating.

However, we have only two reports of such instances.

Senator MONRONEY. There were several cases not pinned down. I am sure it is impossible even to identify the aircraft. How near the near miss was, or even if it was a miss I don't know. If a person sees an aircraft at a long distance away they are inclined to think that since they haven't been told about it by the radar center that something is wrong or that it is inoperative. Maybe the man was not even on the airway.

You will give attention to the testing.

Can you show whether those are operative by mechanical means to the pilot, or is this a matter that can only be identified after the plane went aloft to see if his transponder is actually working and not out because of mechanical failure?

General PRESTON. I believe it is correct, Mr. Chairman, to say that a pilot cannot tell whether his transponder is working from any indication that he gets within the airplane.

He can get a report from the ground, however, that it is working. We are giving this full attention. I am quite satisfied personally that if such incidents as you apparently have had called to your attention have occurred, they have been very rare.

I think the Air Force, the Navy, all the military users of the airspace, are fully conscious of this problem. Of course their own interests are at stake in it. They are fully conscious of it and they are giving it the greatest emphasis. I am fully convinced myself that we are not going to have problems in this area.

Senator MONRONEY. Can your local radar, your local field radar, check whether the transponder is on after the plane gets aloft, say from a SAC base? Could they tell that from their own local radar or would it have to be out of the other network warning radar?

General PRESTON. I can't speak with confidence on that, Mr. Chairman. I think possibly some one else in the room can.

The system is one which with the transponder turned on we get a special indication on the radar. Whether one type radar can and one can't, I don't know.

Senator MONRONEY. I thought there might be a checklist which you could add to the pilot list when he is airborne, and he could check through his own control tower. It would probably insure against an inoperative transponder and also call attention to the pilot that this is something which is being viewed as quite important in the interest of safety.

General PRESTON. Of course, Mr. Chairman, these are checked regularly; and once having been checked they can fail subsequently, or if he took off and had them checked again, they could still fail subsequently. But they are checked and they are reliable pieces of equipment. I don't anticipate a great deal of difficulty in that area.

Senator MONRONEY. One other matter that was called to our attention, since it does involve airspace, was the low level test of the B–58 where I think you flew under 500 feet from Fort Worth to Bakersfield. Was advance notice to users of the airways given in that test? I know it was routed around the congested areas so you didn't have too much reaction to the sonic boom. But I wonder if the users of the airspace were put on notice at that time before the test?

General PRESTON. I don't know, Mr. Chairman, whether that was the case or not. This particular operation was conducted by a contractor. It was not performed by the military, although it was responsive to the military-type requirement. Perhaps FAA could say. I just don't happen to know, Mr. Chairman.

I know from the information that I have that that operation was conducted in accordance with flight control rules and good flight practices.

As you indicated, every effort was made to avoid anything which might lead to undue hazards.

Senator MONRONEY. This was a rather unusual test, wasn't it, to determine the capability of the aircraft at an altitude that would come in under normal radar screens. It wasn't just a pleasure flight or it wasn't a flight that is normally given just to put that much time

on the aircraft. It was vital to the working knowledge of this new high performance aircraft?

General PRESTON. Yes, sir; and this was a very significant test. It gained us very useful information. I don't know how it could have been acquired without such a test.

Senator MONRONEY. Would it be possible, because the airspace is so crowded, as you said so well in your statement, that certain parts of the ocean might be used where it doesn't interfere with oceanic groups, for such low level tests as might be run? It might add to the cost but it certainly would be a little freer of the conflicting traffic.

General PRESTON. I believe I can say that a test such as this, conducted over the ocean, would not have gained us the same type of information, not the type of information we require. There are certain apparent points of difficulty.

First, the problem is one of operating over terrain, not flat terrain, but over the type of terrain in which this same type of operation might be conducted in the event of a wartime operation.

Second, turbulence entered into it, and terrain affects turbulence a great deal.

The problem of navigation in the type of conditions, the type of terrain that you would experience in time of war, was a part of the problem. So that to attempt to conduct the same type of test and secure the same information in entirely different environmental conditions I think would not have been the way to do it.

Senator MONRONEY. In other words, this wasn't being flown according to a flight plan where you would have been free of various terrain difficulties. You were actually simulating what the men would find if it were necessary to come in right on top of the deck with a country with which we were at war, is that correct?

General PRESTON. I judge that, Mr. Chairman. I don't know the full details of this. We could certainly find those details and provide them for the record. But that is my understanding of the test.

Senator MONRONEY. The ability to escape detection by radar; certainly you would have had more ground radar facilities searching for this since it was across ground, rather than over the open sea.

General PRESTON. The possibilities of conducting operations and avoiding detection because of the line of sight characteristics of radar is the factor in the background behind this test. Of course, the particular test was, as I understand it, calculated to establish or to determine the capabilities of this particular aircraft to operate under those conditions; under the conditions which would enable you to fly in this manner against radar.

Senator MONRONEY. During the early parts of the hearing we had some testimony which involved some, I think, 1,000 or 1,200 disciplinary cases that had been submitted to the FAA Administrator, some of which involved military personnel or military planes. We heard on the civilian side generally of the fines that were levied, or where the licenses were challenged, or other disciplinary action taken. The report showed that military disciplinary action had been taken in a great many of the cases that had been submitted to the military side.

Would you care to state, if you could, or supply for the record if you can't, the types of disciplinary action that were taken in these

cases, not by name or individual case—we don't have that on the civilian side—but general types of disciplinary action that have been imposed.

General PRESTON. I think it would probably be more useful for the committee, useful to the committee, if I did provide that for the record, rather than to attempt to state it at this time. There is a wide range of types of actions that can be taken in these cases. I don't have readily at hand the breakdown by proportion of the various types of action resorted to.

Senator MONRONEY. When the military takes action it could show up on the record as a reprimand. But that would show up on the man's personnel file as long as he was in the service, would it not, so that it would be more than just being bawled out? It does become a permanent part of his record and is taken into consideration in his proficiency rating?

General PRESTON. Certain reprimands do become a part of the record. Other reprimands do not. That is stipulated when reprimand is given. I assure you that all reprimands are considered very serious, both by the recipient and by the one administering the reprimand.

Senator MONRONEY. Our record shows in the analysis of violations of military pilots, 202 received—65 were forwarded to the military, leaving a total to investigate, after apparently a preliminary investigation by the FAA, of 137; that there were some 47 cases closed, and the record shows no action taken on those.

Cases on hand, numbering 90, brings you out at the 137 figure reported for the military.

I wish you could give us a little better analysis by numbers at least, than we have received.

General PRESTON. I will attempt to do so.

Senator MONRONEY. For your information, that is on page 239 of the stenographic record, volume II, page 239.

Mr. Secretary, do you have any suggestions that come to you where there is an area which needs either legislation or corrective action to bring about even a better working relationship with the FAA than your statement indicates that we now have?

Mr. TAYLOR. I believe there is some contemplated legislation in connection with the personnel assigned to traffic control, in which it seems necessary to make some provision so that the civilian personnel will remain available in time of emergency or war. That is quite vital to the military because they cannot let any piece of their function be dissipated without having control of it themselves. They would be in a very serious condition if the civilian personnel was not available in such a time and they just can't let it happen. There is legislation on which we are coordinating which has to do with retaining civilian personnel in these cases of emergency or wartime.

As far as the working together is concerned, I think the thing is progressing as well as it can. We have had some real good arguments. I don't want to indicate that we haven't. We have had some real good arguments, but as we have these arguments we seem to understand each other's problems a little better and the final result has been a quite satisfactory solution up to this point.

I don't think of any legislation—and we have asked ourselves the same question—which would improve this relationship. I think you

have to go through the arguments in this sort of thing when you are doing something which fundamentally affects both organizations as deeply as this one does.

I can't tell you of any other legislation which we think about, which we think is necessary. We would rather reserve that question for another year of operation and see if anything else occurs which is necessary.

Senator MONRONEY. The point that you mention was anticipated as being a problem on how to hold keymen vital to the operation of our air traffic both here and abroad at their posts of duty to compensate for loss of veterans benefits and other things that would follow that would cause them to leave their civilian posts of duty and accept military service. That was all anticipated, and this committee will be anxious to get underway as soon as the consideration has been properly given by the FAA and the military to working out some plan for this.

When this is done, this will enable you then, will it not, to transfer largely the duties of air traffic controller, now carried on by probably several thousand military personnel, to civilian trained air traffic controllers and air traffic specialists?

Mr. TAYLOR. That is what we anticipate.

Senator MONRONEY. This will relieve you then of the turnover and of a training program which has become quite burdensome and quite expensive?

Mr. TAYLOR. Yes. And as long as the personnel is secured shall I say, for military operation, the military is ready to accept that.

Senator MONRONEY. This will be one of the things that would help to expedite the movement into the standard air traffic control, with everybody going through the same school, everybody working on the same training base.

We heard during these hearings a considerable amount of comment that the Military Air Transport Service has had a very successful operation with a low percentage of accidents or fatal accidents. Would you care to comment on what the MATS accident rate was?

Mr. TAYLOR. I believe it was zero in the year 1959.

Senator MONRONEY. That would be fatal accidents?

Mr. TAYLOR. Fatal accidents was zero in the year 1959 in the transport element.

Senator MONRONEY. That is passenger transport?

Mr. TAYLOR. I believe the year before that was two, and the year before that it was two.

Senator MONRONEY. Do you mean two accidents?

Mr. TAYLOR. Two accidents. Two in 1957, two in 1958, and none in 1959, as I recall the figures; which is exceptionally good.

Senator MONRONEY. It is a very safe record indeed. I thought that on the credit side certainly this is a safety operation that any airline or any military service could pride themselves in attaining.

Do you have any of your able assistants with you who wish to add anything?

Mr. MACAULEY. I think I have nothing to add, Mr. Chairman.

Senator MONRONEY. The military is satisfied that the Agency has been able to resolve many of the long pending and sometimes often delayed and even postponed decisions that should have been made more expeditiously within the military and the civilian side under the old

system of CAA. That now with the proper powers and the way that the act has been drawn it does give you a chance to focus on the important problems and to get a rather prompt resolution of them. Is that correct?

Mr. TAYLOR. We have been making very good progress, I would say.

Senator MONRONEY. We thank you very much, Mr. Secretary, for the courtesy of your appearance here, and for the value of your testimony.

We appreciate the fact that you were willing to come up here this afternoon so that we would not have to delay your departure on other business.

Mr. TAYLOR. I thank you for taking that into consideration, sir.

Senator MONRONEY. Tomorrow we will have as our witnesses the air traffic controllers. First is Mr. William K. Lawton of the National Business Aircraft Association, Inc. Second will be Mr. Joseph B. Hartranft, Jr., of the Aircraft Owners and Pilots Association. If we have time we would like to have Mr. William Lyne, of the National Pilots Association, and Mr. Tipton, of the Air Transport Association, stand by so that if statements do not run too long, we could complete the testimony of those men tomorrow. We have some conflicts on other hearings in this committee later and we would like to move along as rapidly as we can.

Thank you very much for your appearance and your helpful testimony.

The committee will stand in recess until 10 o'clock tomorrow morning.

(Whereupon, at 5:07 p.m., the subcommittee was adjourned, to reconvene at 10 a.m., Tuesday, January 26, 1960.)

52355—60—pt. 2——5

# REVIEW OF THE FEDERAL AVIATION ACT

TUESDAY, JANUARY 26, 1960

U.S. SENATE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
SUBCOMMITTEE ON AVIATION,
*Washington, D.C.*

The subcommittee was called to order at 10:19 a.m., in room 5110, New Senate Office Building, Hon. A. S. Mike Monroney presiding.

Senator MONRONEY. The Subcommittee on Aviation will resume its hearings. We are very happy to have Mr. Francis M. McDermott, executive director of the Air Traffic Control Association, of Washington, D.C.

Mr. McDermott, will you come forward and bring any of your aides that you might have or wish to have accompany you to the witness table.

**STATEMENT OF FRANCIS M. McDERMOTT, EXECUTIVE DIRECTOR, AIR TRAFFIC CONTROL ASSOCIATION, WASHINGTON, D.C.; ACCOMPANIED BY HOWARD GRAHAM, TRAFFIC CONTROL CENTER, WASHINGTON NATIONAL AIRPORT; LONNIE PARRISH, CHAIRMAN, WASHINGTON CHAPTER, AIR TRAFFIC CONTROL ASSOCIATION; JOHN FLAHERTY, AIR TRAFFIC CONTROL TOWER, WASHINGTON NATIONAL AIRPORT; AND LES WOODALL, AIR TRAFFIC CONTROL TOWER, WASHINGTON NATIONAL AIRPORT**

Mr. MCDERMOTT. Thank you, Mr. Chairman.

Senator MONRONEY. We are very glad to have you with us this morning. We have heard a lot of fine compliments about your personnel in the air traffic control towers throughout the country by almost every witness who has been before the committee, and by a great many of the committee members themselves.

We appreciate your taking the time to come up here and talk about this very vital problem of air traffic control. You may proceed in your own way. I believe you have a statement which you would probably like to read first.

Mr. MCDERMOTT. Thank you, Senator. I certainly appreciate the very friendly atmosphere which has prevailed throughout this entire hearing on behalf of air traffic control.

I do have a prepared statement. I would like to first introduce some of the traffic controllers who are here with me.

From the traffic control center at Washington Airport, on my far left, Mr. Howard Graham.

On my immediate left, Mr. Lonnie Parrish. Mr. Parrish is also chairman of our Washington Chapter of the Air Traffic Control Association.

On my immediate right is John Flaherty, from the air traffic control tower at Washington National Airport.

On his right is Mr. Les Woodall, of the control tower.

Senator MONRONEY. All these boys are from the Washington control?

Mr. MCDERMOTT. These are all from the Washington facilities. They are all FAA employees and members of the Air Traffic Control Association.

Mr. Chairman, the Air Traffic Control Association is a professional society of nearly 8,300 persons dedicated to progress in the science of air traffic control. Our membership, which is drawn largely from among the 11,000 air traffic controllers of the Federal Aviation Agency, includes a rapidly growing number from the Department of Defense.

The functions performed by this group of controllers, in their daily, round-the-clock operation, constitutes one of the most vital elements in the safety of aviation. That Congress has long been aware of this fact is a matter of public record. In 1958, Congress expressed its concern about aviation safety in general, and air traffic control in particular. It took positive action to improve air safety through passage of the Federal Aviation Act. It is significant to note that Congress, in this act, gave recognition to the vital role of the air traffic controller in aviation safety, and laid down specific requirements that the Federal Aviation Agency study and recommend positive steps toward improvement. Specific areas for study and recommendations as listed in the act included—

1. Special qualifications and training;
2. Special provisions as to pay, retirement, and hours of service; and
3. Special provisions to assure availability, responsiveness, and security status of essential personnel in fulfilling national defense requirements.

There is ample evidence in the testimony leading to the inclusion of these provisions in the act, that air traffic control ranked among the foremost problem areas to be considered.

The association has presented to the Federal Aviation Agency its views on these items, and is prepared to offer testimony at the time the FAA recommendations are later submitted to Congress for consideration. I had planned to have Mr. Oswald Ryan, ATCA general counsel, testify with us this morning. Mr. Ryan has been quite ill for the past 3 weeks and is unable to appear. However, arrangements have been made for him to make a statement later on during the hearings. We certainly appreciate this consideration.

Senator MONRONEY. We will be very happy to accommodate him.

Mr. MCDERMOTT. Thank you.

It is my purpose here to bring up to date the account of current conditions in aviation safety, as they are affected by air traffic control.

The acute situation in air traffic control was largely responsible for the passage of the Federal Aviation Act in 1958. The only significant change since then has been a general 15 to 20 percent increase in all phases of the air traffic control function. That such an increase was

absorbed by the system with no visible deterioration in safety is a genuine tribute to the sense of dedication which is uniquely characteristic of the air traffic controller. I maintain there is no other group in aviation today which bears the level of responsibility for safety of life and property as does the air traffic control group.

At the same time, this service of air traffic control provides the lifeblood of what is rapidly becoming one of the major segments of our national economy and which is equally vital to our national defense effort.

I make these statements advisedly, and with full cognizance of the responsibilities of the pilots. My statements take nothing away from the pilot. But it should be noted that with the introduction of each new and complex flying machine, there has been an untold expenditure of time and effort in engineering the aircraft in terms of the latest and best techniques and equipments, to make the pilot's job safer and less demanding, both physically and mentally.

Another important distinction is that the pilot is generally concerned with only one plane—the one he is flying. On the other hand, the traffic controller is simultaneously concerned with many planes. With little appreciable improvement in the basic tools of his science, he has thus far been able to absorb an amazing increase in traffic with no immediately detectable effect upon safety. I say "immediately detectable" because I wish to make it unmistakably clear that the air traffic control profession today is functioning at a level of sustained pressure and tension unequalled in aviation, or any other profession during peacetime. I submit that this is a level of activity that will eventually exceed human endurance, and will begin to have a distinctly adverse effect upon safety.

Mr. Chairman, if I may depart from my prepared testimony for a moment: On January 4, just over 3 weeks ago, Idlewild tower experienced their peak day in history. This is attributable to the normal increase in traffic plus the fact that certain flights had been diverted from LaGuardia because of the facelifting operation over there.

On January 5, the following day, one of the controllers who had worked during this peak activity reported to the traffic control tower at 4 o'clock. He worked from 4 until 7 on the departure control position and then was shifted to the ground control position where he worked for an hour and 40 minutes and complained of some pains. His fellow workers said he appeared to be getting a little foggy in his decisionmaking. He asked to be relieved and, although there was no one on hand to relieve him, they doubled up and allowed him to sit down.

He immediately collapsed and passed out. A doctor was summoned. The police came and revived the man with oxygen. The doctor diagnosed this as a mild heart attack. The man was taken to the hospital. Seven days later this man died. He was 38 years old.

I recognize that in this statistically minded society, we must have documentation—strong statements such as these must be supported by facts; in this application, medical case histories. Although I feel that a pattern of mental and physical disorders is developing, we cannot produce 20-year graphs and charts to illustrate the point. The reasons are as follows:

1. The tension and stress of the air traffic control function has developed rather swiftly during the past few years.

2. The current average age of the air traffic controller is relatively low, due principally to the tremendous expansion in the air traffic control service in recent years.

3. As previously mentioned, there is in fact, a unique sense of dedication among the personnel of the air traffic control service, and they are more apt to avoid publicizing the effects of tensions associated with their work.

If I may make a slight comment on an article which appeared in the New York Times on January 19: It is an article which described the research and development effort of the Federal Aviation Agency and describes certain efforts to be undertaken in the medical field. A certain amount of money for research and development, including studies on the aging pilot's proficiency and the physical limitations of passengers and crews in high-speed, high-altitude aircraft. The studies would include oxygen requirements and hearing damage caused by jet noises.

I have discussed this matter with the Civil Air Surgeon of the Federal Aviation Agency, with the suggestion that the problem of stress and tension in the controller is probably of equal importance to the passenger comfort studies which are planned for fiscal 1961. I have been assured that this is a program which would be taken up in 1962. We are continuing our negotiations with FAA and will strongly recommend that this problem be taken up with a little higher priority.

Senator MONRONEY. Do you have or has your association ever undertaken to make a classification, say, of No. 1 airports, those having a landing and takeoff averaging every 2 minutes or less, or those averaging every 1 minute or less, where you could break down by categories so that we could know something about the numbers and the strain and the stress, which I imagine varies by the number of operations and the amount of air traffic that the tower operators have to control or to guide safely to a landing or give permission for takeoffs?

If we could expedite the training program enough, we might be able to bring these men along from smaller airports to high-density airports where they could be given, at these terribly critical points, greater periods of relaxation, even to the point of giving the man in a very busy airport a 3-month duty assignment where he would have a chance to at least relax a little bit from the tensions which are ever upon him.

Mr. MCDERMOTT. This is something in which our association is greatly interested. Our immediate resources are a little limited. We try to make up for this by the volunteer effort put in by our 47 chapters throughout the country, which actively study this sort of problem on their own time. As we grow we hope to be able to do something more formal in the way of research. We think that we can best help by pointing out certain areas and working with the Federal Aviation Agency that has these resources for this type of research.

As far as the classification of facilities is concerned, Mr. Thomas yesterday in his testimony mentioned that there had been a recent classification which dealt in terms of operation, numbers of landings, takeoffs, and so forth. I am not sure that this is a fine enough classification to reveal the stress-and-strain figures that we are interested in.

For example, this peak activity at Idlewild that I referred to was something under a thousand operations in a 24-hour period. This con-

trasts with the 1,700 operations at Midway Airport, which is a current peak.

I think you have to look at it in terms of the number of people who are actually working the facility, the configuration of the airport, the traffic patterns, the fact that Idlewild has an additional problem of foreign carriers using the airport. So numbers themselves cannot be indicative of the precise strain.

On stress and strain, Mr. Chairman, I hope that my clipping file is not digressing too much.

Senator MONRONEY. No. Carry this on so as to get the story across. It is highly informative.

Mr. MCDERMOTT. There was an article in the Washington Post on January 16 which described the stress and strain encountered on Wisconsin Avenue by automobile drivers. I felt that this was a very interesting presentation because it pointed out that in driving down one particular street a driver encountered stress and strain every 24 seconds. In driving down another street he encountered stress and strain every 30 or 40 seconds. It didn't tie in directly with the amount of traffic encountered. So there were other factors involved. I was particularly interested in the way in which they measured this.

This was a study conducted by the Bureau of Public Roads over a 6-month period, in which they strapped electrodes or devices to the back of the hands to measure galvanic reaction or some such thing.

I see no reason why—and this is a technique which has been developed—this type of thing couldn't be used to gain the fact that we do need to either prove or disprove this tension business in the air traffic control. I would be very much interested in seeing a comparable study of stress and strain on the man working in this very hot position in the midway tower between 5 and 6 in the afternoon. These are things that we are discussing freely with the Federal Aviation Agency and I think they are quite interested in this.

Senator MONRONEY. You have not yet received any assurance from the Civil Air Surgeon that they will make this study?

Mr. MCDERMOTT. It has been very recent that I have talked with them about it. I have not been turned down. I am very much encouraged that this is something they will undertake. I think it has something to do with a particular specialist who they feel will do the best job in this field.

Frankly, I don't believe that this committee would suggest that actions related to aviation safety be delayed until statistics are developed to show that we have been experiencing a serious problem. This is the old "traffic light philosophy" when there have been enough fatalities and accidents, then it is time to put up the traffic light, not before. We in aviation cannot subscribe to safety on that basis. In air traffic control, we learn to take actions based upon anticipation of the needs of the pilot—we cannot wait until it is statistically proven that two aircraft will come close. We feel that this committee shares our views.

I am personally grateful that attention is being focused upon this very important element of aviation safety, for it is no exaggeration to say that the controller today is working at a killing pace—a pace which is destined to materially shorten the useful career life of the individuals concerned. It cannot help but have an eventual effect upon safety.

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I would now like to present a brief summary of the startling growth in aviation, in terms of its impact on air traffic control. During the year 1950, 17.3 million airline passengers were enplaned throughout the United States. During that same year, the Chicago Midway control tower handled 234,000 landings and takeoffs. The maximum number of operations handled at Midway Airport during a single day in 1950 was 1,050, or one landing or takeoff each 82 seconds throughout the entire day. The maximum number of aircraft handled by a single controller during a 1-hour period was 128.

Another measure of air traffic control activity is the number of flight progress strips produced in air route traffic control centers in the control of en route traffic along the airways. (At this point, I might add that the public conception of air traffic control unfortunately fails to include the ARTC centers and the vital safety role they play.) In that same year, 1950, ARTC centers produced 10 million flight progress strips.

At these traffic loads in 1950, the controller was working under a measurable and definable tension and strain for sustained periods of up to 8 hours at a time.

During the next several years, air traffic increased in all categories at a rate of approximately 15 percent per year. It was clear in the testimony preceding the Airways Modernization Act, and the Federal Aviation Act which followed, that air traffic control was identified as vital to the continued safety of air transportation.

During the year 1957, the total enplaned airline passengers throughout the United States reached 49.3 million; a growth of 127 percent over 1950. In 1957, Chicago Midway control tower handled 408,000 landings and takeoffs; up 74 percent from 1950. The peak day at Midway Airport during 1957 was 1,519 operations, representing a landing or takeoff each 57 seconds throughout the day. The maximum number of aircraft handled during a single hour that year at Midway was 140.

Senator MONRONEY. That point, I think, is quite important—between the hours say of 1 a.m. and 7, or something like that, that there are much fewer planes being landed. So the daily average does not necessarily measure the degree of tension. It is the peak periods that cause the worse stress and strain, is it not?

Mr. MCDERMOTT. That is certainly true, Senator. The traffic between 8 in the morning and 8 at night is far greater than any traffic on the midnight shift.

During 1957, ARTC centers produced 30 million flight progress strips; an increase of 200 percent over 1950. This gives a direct indication of the increased reliance being placed upon the air traffic control system in the year following the Grand Canyon disaster.

There has been no change in the growth pattern since 1957—a steady increase of 15 to 20 percent each year. The situation is further complicated by the introduction of faster and higher performance aircraft.

The comparable figures for 1959 are as follows:

Total enplaned passengers, 57 million—up 229 percent over 1950.

Total operations handled by Midway control tower, 431,600—85 percent over 1950.

Peak day traffic at Midway Airport, 1,694 landings and take-offs—an aircraft movement every 51 seconds day and night.

Maximum number of aircraft handled by a single controller during a 1-hour period—197 aircraft.

Total flight progress strips, 37 million—up 270 percent from 1950.

It is important to note that improvements in the air traffic controller's tools have a multiple purpose. Not only do they seek to make the operation a safe one, but there is that underlying aim to increase the controller's traffic-handling capabilities. Of the variety of new devices introduced during the past decade, there have been two fundamental additions to the controller's tools: (1) direct pilot-controller communications, and (2) radar. It is true that others are in the process of now being installed, and will eventually come into greater operational use. At the moment, however, these two have been the basically different tools provided. Each has increased the controller's capability for handling more aircraft—and he has done it by making more decisions, and faster decisions, with less opportunity for advance planning.

The growth figures and percentages just presented are derived simply from expansion of the existing elements of aviation. They do not take into account one of the most potent sources of air traffic—the air cargo carrier. Air traffic control watches this newest development with great interest, awed by the tremendous potential increase in air traffic—air freighters may become more numerous than box cars—and is deadly aware of the responsibility for providing a service to permit the effective operation of a new and major phase of air transportation.

Not only is air traffic control becoming involved with more and more aircraft, but it is becoming involved with more and more aspects of the aviation safety, and even space age, safety picture. ATC is becoming more complicated; the controller's job is more complicated; and his services are more and more in demand to provide an added measure of safety.

I am sure, Mr. Chairman, you read the article in the November issue of Fortune Magazine which had probably the most graphic picture of this complicated air traffic control situation on the Washington to New York airways.

Recognizing that increasing speeds of aircraft have limited the applicability of the "see and be seen" principle for collision avoidance in good weather, the industry has been searching for such devices as the proximity warning indicator and the collision avoidance system—devices which might be installed in aircraft to avoid collision. Such equipment is not yet available and, even if available, there is little likelihood that it would be called upon to do more than supplement the air traffic control system. We cannot foresee it replacing the air traffic control service. The desire to enhance safety, meanwhile, has caused the industry to place considerably more reliance upon the controller and the ATC system to provide every possible measure of safety—many times entailing new and different responsibilities for the controller.

As "Ace" Robson in his article in Aviation Week, November 9, stated:

> Traffic control at a major terminal is a major occupation and requires professionals. It must operate in a firm, calm, and intelligent manner. It must appreciate the principle of first come, first served. Unless we have good men on the job, our fast appearing jets will reduce airport snarls to hopeless impossibilities.

Senator MONRONEY. Would this be a proper statement: That the hotter the airplanes get, the higher their performance and the more crowded the airspace and the more jammed up the landing patterns, you look first for mystery equipment that is going to make it perfectly safe to get through this in the cockpit; then invention and ingenuity breaks down in putting it in that small area and it finally winds up on the air traffic controller's back to perform an extra duty, two or three more duties, in order to perform that function from the ground which is found to be needed so badly?

Mr. MCDERMOTT. Mr. Chairman, I think that sums it up beautifully. I have had a number of years as a traffic controller. I spent my last 6 years in research and development with the FAA, working on these precise problems. I really couldn't add to your statement. This has been the history of the growth in aviation.

Senator MONRONEY. Generally your tools are a piece of paper and a lead pencil, your two eyes and your voice, and this is about the size of the automation that we have been able to obtain to relieve you of this heaping load of new safety functions which are found to be needed but no one else can perform.

Mr. MCDERMOTT. I might say that the introduction of automation is a real advance in air traffic control. I should point out that this automation is relieving the controller of a lot of the routine clerical functions which bog him down and take his time away from the decisionmaking job which is so important to him.

We also find that as we make the controller available to handle more airplanes, there are more airplanes there to be handled. So we are not really reducing his job any by some of the innovations that have been introduced in the system so far. We are merely providing him with the capability of handling more airplanes and adding to the part of his job which deals with decisionmaking, which is really the part which contributes to the stress and strain.

Senator MONRONEY. You mentioned the fact that you had, I think during 1959, a peak period of 197 plane movements every 60 seconds at Midway.

Mr. MCDERMOTT. This was not landings and takeoffs. These were the number of aircraft handled by one controller during a 1-hour period. This includes aircraft taxiing upon the surface of the airport, crossing active runways, this sort of thing.

Senator MONRONEY. Has there been any sign of diminution of these activities as a result of the opening of O'Hare?

Mr. MCDERMOTT. There have been a number of operations transferred to O'Hare Field. I don't have the exact figures. But up until several months ago it seemed that for every flight that was rescheduled at O'Hare Field there was another one to fill its spot at Midway.

Senator MONRONEY. That is just the point I am getting to. Actually there is so much demand for landing rights and new schedules into these fields, that if you open up a second field as you did at O'Hare,

do you actually relieve the congestion over the old field, or is it replaced by other schedules dropped in there to take the place of perhaps the transcontinental which has moved to O'Hare and some other types of flights?

Mr. McDermott. This is a question that I am sure the FAA could provide the very latest statistics on. But prior to the opening of O'Hare Field there were many flights they couldn't accommodate at the other, and scheduled airlines would have been pleased to schedule more flights in there.

Senator Monroney. We have the case in Washington where we have a maximum capacity. I don't presume that they can get into any kind of reasonable traffic producing hours. Therefore even when we get Dulles International opened, we will probably find that still you have great congestion over Washington National.

Mr. McDermott. I think this is true, Senator.

Typical of such services is the special radar traffic advisory information provided to civil turbojet transport aircraft. Instituted little over a year ago when the airline jets went into service, the program calls for FAA controllers, many assigned to remote Air Defense Command radar sites, to issue traffic information based upon their observations of the radar. While it has contributed some additional safety, it should not be regarded as the equivalent of positive control, a service which is currently being afforded on a very limited number of airways in a limited number of altitudes.

Because of the many complexities of the radar jet advisory service, it is limited to civil jet transports, although military users have expressed interest in the procedures. We would not recommend its expansion because of its limitations and the fact that the workload entailed, if expanded, might be better devoted to actual control of the traffic.

I recall when this service was first started, when Pan American first inaugurated their oversea flight and their first departure from Idlewild was scheduled, it was necessary to literally drag the controller out of the Idlewild center, rush him out to the eastern tip of Long Island to the Air Defense Command site, and tell him, "This is your job to provide this advisory service to this airplane. And it was only one airplane in the beginning. And when he comes back, be prepared to give him this service again."

This is the way it started. It has grown tremendously. I think they now man 44 such sites. This was another function which the air traffic controller absorbed very happily and voluntarily. But when he was first sent out there to this remote tip of country, he had no idea whether he was going out there for 1 day, 6 days, or 6 years.

Another illustration, at one of the points on the west coast where controllers are detailed on a 6-day basis, they are provided a day off before the 6 days start and a day off at the end of the 6-day period. During the 6-day period, however, they are on for 8 hours a day and they are on call for the other 16 hours.

This "on call" means they must be within 15 minutes of their duty station all the time. One of the sites requires 6 hours' driving to reach it from the man's home. This driving must be done on this day off before and the day off after. He is reimbursed for this travel time and reimbursed for his mileage. But it is another one of the

additional job's responsibilities which have been absorbed by the air traffic controllers.

Senator MONRONEY. Is he reimbursed for his lodging nearby, to be on call?

Mr. MCDERMOTT. That is true. He receives per diem for that time.

Senator MONRONEY. But he is still away from his family for this period of time. The remoteness of the location would probably not permit him to give education to his children or to establish a home; is that correct?

Mr. MCDERMOTT. This is true. These assignments are rotated so that they come up every 5 or 6 weeks. The man spends 1 week on this.

Senator MONRONEY. Let me see if I understand what you mean by this statement on radar traffic and advisories to the pilot from the radar scope where you say:

> Because of the many complexities of the radar jet advisory service, it is limited to civil jet transports, although military users have expressed interest in the procedures. We would not recommend its expansion because of its limitations and the fact that the workload entailed, if expanded, might be better devoted to actual control of the traffic.

Through the past years, many of the airspace users have indicated at least before this committee that they thought once you could give radar surveillance you would have the problem of positive separation solved. By this statement you indicate that, based on the wide experience of the men who have to handle this traffic, radar tracking is not and will not become the major source of safety in air separation; is that correct?

Mr. MCDERMOTT. We think, Senator, that the main effort should be concentrated on driving toward positive control at these altitudes, rather than merely issuing advisories to certain aircraft on other aircraft on which you don't have too much information. We recognize that this is something you can't accomplish overnight.

Dave Thomas spoke on this yesterday, and said that this was certainly an objective which would be reached when they had the men and equipment to accomplish it. All we are saying is that we recognize this as an interim measure, but we shouldn't lose sight of the fact that it does not answer all of the questions of safety at those altitudes.

Senator MONRONEY. In other words, positive separation is giving a man an assigned altitude, going on an assigned airway, with separation of 20, 50, or whatever the necessary number of seconds separation is, to pursue his flights under those conditions, as the only media and means by which we can provide the maximum safety in flight, and that you cannot depend on random departures, even though you have an assigned altitude, and most of them would have, I assume, and then track by radar to warn one plan away from his approaching too near to the other, or conflicting traffic through the radarscope?

Mr. MCDERMOTT. I can't see that type of arrangement in terms of existing equipment for identification and communication with the aircraft, Senator.

Senator MONRONEY. We will perhaps be on a railroad block system in the air. You don't get planes going in opposite directions on the same track. For example, you don't allow a passenger train to ap-

proach too near to a freight train going in the same direction. You have to have the right-of-way cleared and specified and guaranteed through the progress of the flight on the flight plan which has been filed.

Mr. McDermott. I agree with what you say, Senator. I have to merely make one point. This railroad block system has certain connotations in air traffic control that have been debated back and forth in research and development. I was not commenting that this block system that is generally referred to is exactly what we feel is necessary. I am merely saying that positive control at these high altitudes and these high speeds is the objective, the desirable objective, and that we shouldn't lose sight of this and feel that this advisory service which has been thrown in as an interim measure is the real answer.

Senator Monroney. You don't see any possibility of even using those techniques of radar to supplant your filing of flight plans and positive control?

Mr. McDermott. No, sir; I don't see how we can depart from the flight plan as the real basis of the air traffic control system.

Senator Monroney. We have had a good deal of criticism of the FAA on the basis of their still following the "see and be seen" concept. Mr. Thomas' testimony I thought rather clearly answered that in that up to the point of the capability of the air traffic control system, they are departing from the see and be seen with positive control.

But the facilities and personnel and even separation of various airspace to the users still would not permit us to go into that immediately. It is a matter of evolution rather than sudden change. Is that correct?

Mr. McDermott. This is true; yes, sir.

Senator Monroney. The feeling of the air traffic controllers is that you now are stretching against all kinds of limits of personnel and equipment and communication, radio spectrums, and everything else, to maintain some measure of positive control and that expansion will have to be as rapid as it can be, but it is still governed by personnel, equipment, radio spectrums, and things of that kind?

Mr. McDermott. It has to be on an orderly basis so that it doesn't provide restrictions on the flow of the traffic and does not completely overburden the traffic control system.

While on the subject of traffic information, it should be pointed out that controllers have always provided some form of this service as an adjunct to the regular control service. With the advent of radar, greater demands are constantly made for additional radar traffic information service.

The provision of traffic information from a radarscope is more difficult than might be imagined, and can seriously detract from the radar controller's prime function of separating IFR traffic in controlled airspace. The traffic information given by a radar controller is generally that traffic observed on his scope about which he has absolutely no information.

Altitude is not apparent from the scope, and the intentions of the pilot being observed are not known. Consequently, the controller reporting such traffic to a controlled flight in a busy area may have more targets visible than he could humanly report; he cannot be required to

automatically direct his controlled flights away from such great numbers of random targets.

The mere calling of such traffic might possibly be regarded by a pilot as distracting, particularly since much of the traffic could be thousands of feet above or below the controlled flight, and in no way representative of a hazard. Many times, the issuance of traffic information is more difficult than actually controlling the traffic.

Nevertheless, traffic information service of another type is available to any pilot operating on an IFR flight plan in radar-controlled areas or to VFR pilots who request the service in these areas. This service, however, is not automatic and is subject to the controller's ability to cope with the additional service without derogating his prime mission.

Senator MONRONEY. I think it might be good to make the record clear that the anticollision functions of shipborne radar give you only the two dimensions but do not give you the third dimension which is so necessary in aviation.

In other words, a ship picking up a target on radar knows that this ship is at the same altitude because they are both floating on the sea. But in the air you can have separation from a thousand feet to 40,000 feet, which would be perfectly safe if they are separated by altitude.

But on a radar scope it might be very difficult to tell whether a plane at 40,000 feet might be on a collision course with another plane at 40,000.

But if you could see that one was on a course at 40,000 and the other was at 10,000, you would have an abundance of separation which would not indicate any danger whatsoever.

Mr. MCDERMOTT. This is not apparent on a two-dimensional radar.

Senator MONRONEY. If you call attention of approaching traffic to plane A at 10,000 and it turns out that this other plane was at 40,000, the pilot would be pretty darned sore, wouldn't he, to be bothered by something so completely away from him as that?

Mr. MCDERMOTT. It has been a source of irritation. It sometimes reaches the point of the fable about crying "Wolf." The pilot might feel he would rather not be bothered with all this information about flights that are not at his altitude.

Senator MONRONEY. We have had testimony that as you monitor these high altitude flights—between 24,000 and 40,000——

Mr. MCDERMOTT. 24,000 and above now, Senator.

Senator MONRONEY. Do the men watching these radar scopes pick up traffic or have to know what traffic below 24,000 feet they are picking up on the scope?

Mr. GRAHAM. No, sir.

Senator MONRONEY. It looks the same as a pip on the screen, whether it is at these higher altitudes or completely under them?

Mr. GRAHAM. Yes, sir; that is correct.

Senator MONRONEY. How does that operate? What good does it do a jet pilot at 35,000 feet?

Mr. GRAHAM. The way it works, you will monitor the flight as he comes on the scope. If you see an aircraft or a target, any target, come within a certain distance, say 5 miles from him, you will advise him that he has traffic converging, either head on or in any other direction.

You sometimes don't always see this traffic, if it is a small fighter-type aircraft. This is an advisory service that you provide.

Senator MONRONEY. Then comes in this business of the transponders. All aircraft in that area, both civilian and military, are supposed to use transponders so that in that way you can identify, if the transponders are on, the aircraft that are cleared to use those altitudes; is that correct?

Mr. GRAHAM. That is true to a certain extent. All the aircraft have transponders.

This transponder is a mechanical invention. It can go bad at any time.

Senator MONRONEY. It is what?

Mr. GRAHAM. It is a mechanical invention. It gives off a signal and it can go bad. So if you have one aircraft which doesn't have a transponder you may not be able to see him with radar.

Senator MONRONEY. The only airplanes that are cleared to fly at this altitude are supposed to have the transponders in workable condition so that you can, by the transponders, identify the traffic that normally would be at those altitudes and therefore identify those that would be important to the jet pilot who is crossing the country?

Mr. GRAHAM. Yes, sir; that is true.

Senator MONRONEY. So the transponder becomes a very vital cog in making that portion of the airspace useful?

Mr. GRAHAM. Yes, sir; that is right.

Senator MONRONEY. However, it still doesn't give you any altitude indication. A plane can be at 20,000, 40,000, or above, and still you would have no way of knowing whether a collision course was a true collision course or whether there was adequate and ample altitude separation?

Mr. GRAHAM. That is true. He could also be from the ground to 35,000 to 40,000, because they use the transponders at low altitudes also.

Senator MONRONEY. They do? In other words, their climb-out or letdown would have the transponders still working, so that would give added importance on the screen without necessary information to the pilot.

Mr. GRAHAM. Yes, sir; that is correct.

Mr. MCDERMOTT. While only being provided on a very limited basis at present, we look for the gradual expansion of positive control service in various areas during the coming year.

It is important that it be clearly understood, however, that we do not envision positive control being exercised over all aircraft in all airspace, either now or in the future. While we do feel that there will be a gradual expansion of positive control to meet the needs of safety, particularly at the higher altitudes, we feel that there will always remain certain airspace in which the principles of "see and be seen" separation will afford the necessary level of safety to certain types of traffic.

Positive control is a direct and specific means for minimizing collisions, and it requires certain standards of the participants. To reduce these requirements will reduce the effectiveness of the program.

Safety costs everyone something. It is simply a matter of determining how much you are willing to spend for safety—and you will soon determine how much safety you will get.

Air traffic controllers are providing service to military aircraft engaged in special maneuvers designed to test the air defenses of our

Nation. Simulated attacks upon major installations are conducted by various units, while air traffic control provides separation either between participating military flights or between the military units and other nonparticipating traffic.

Mr. Thomas yesterday referred to Operation Oilburner which is described in the Airman's Guide, six pages of various routes. I think that Operation Oilburner is a splendid example of the spirit of cooperation between the Air Force and the FAA and air traffic control.

I think it is a fine illustration of the ability of ATC to respond to a special situation.

I think that Operation Oilburner represents one of the most incredibly complex operations ever to face ATC on a day-to-day basis. These routes are advertised for 6- to 8-hour periods of a day, 5 or 6 days a week.

As far as I can tell it has been running very smoothly.

Senator MONRONEY. But these are approved and put out by the FAA and go through your air traffic control system. These are different from the kind of exercises that the Aircraft Owners & Pilot's Association complained about which are based on a simple waiver by a regional head and may not clear in time or be information in the centers so that it will get in the Airman's Guide or even so that the air traffic controllers may have notice of it before it is sprung on the public. Is that true?

Mr. MCDERMOTT. This is true. Operation Oilburner is not in that category.

Senator MONRONEY. No. But there must be some regularization of this waiver business so that it comes through the central headquarters, and so that all air traffic controllers are on notice as well as all operators of aircraft.

Mr. MCDERMOTT. And I—and I think the whole association—feel, as Dave Thomas expressed yesterday, this is a situation that will be adequately taken care of in spite of the problems involved.

Military training operations account for thousands of flight operations, and air traffic control is constantly called upon to provide serice to these groups. Recovery of jet fighters engaged in operational readiness tests, refueling operations for military jets, special navigation missions, hurricane and cyclone hunters, cloud seeders, all seek the specialized service of air traffic control.

Even missiles become involve with air traffic control. Launchings at Cape Canaveral have a direct bearing upon the use of various controlled routes and necessitate diversion of air traffic. Special altitude reservations are made for air-breathing missiles operating between certain points in the western part of the country. Impact areas for missiles in the Pacific long-distance range must be protected, and if the Russians carry out their plans for firings into the Pacific, air traffic control must concern itself with such operations.

We can foresee, too, the possibility of another problem area. Under terms of the Federal Aviation Act, the Administrator is given clear and unmistakable authority over the airspace. As the performance of manned aircraft increases there is bound to arise a question as to where is the airspace, and who controls it. Missiles and aircraft will have certain areas of common interest. There can be only one traffic

control agency, and there is need, perhaps, to clarify the FAA's authority on this score.

Special corridors for military jet fighters on active air defense missions are established by ATC, as well as a special corridor for the X–15 test vehicle. Special provisions for other supersonic aircraft must be made by air traffic control, and areas must be allocated for test flights. Nuclear bomb tests conducted by the Atomic Energy Commission in Nevada and in the Pacific necessitated special handling of air traffic and diversions to avoid test areas.

Noise abatement programs, once regarded as the problem of the operator of the aircraft and the pilot, have now been added to the growing list of special programs in which the controller is involved. While noise abatement programs are not regarded as safety programs, they are regarded with such importance by FAA that they are second only to safety. Antinoise procedures definitely complicate the handling of traffic, and can well limit the flexibility of movement and operation ordinarily available to controllers. While such programs have their rightful place, care must be taken that they are not allowed to compromise safety.

Senator MONRONEY. In other words, if over a metropolitan airport which has one set of approaches over populated areas and the other oversea areas, if you try to overcrowd the sea approach by diverting too much traffic from the populated areas, then you will threaten safety; is that correct?

Mr. MCDERMOTT. This could have an effect on safety only if it overloaded the system or overloaded the controllers, as I see it. Before it would be allowed to complicate safety, I am sure that the traffic would merely be restricted and there would be delays in the operations.

Senator MONRONEY. Suppose you have 180 degrees over the sea and 180 degrees over a populated area. You could have two approach areas which could be made and you could have traffic separation there. But if the noise abatement problem became of prime importance, then you must cut out the 180 degrees over the populated area and pack all of that traffic into 180 degrees over the sea. Thus, you would complicate your traffic problem tremendously and endanger, to a degree, safety in those approaches, would you not?

Mr. MCDERMOTT. I agree. I think that there is an optimum arrangement of air routes and approach patterns when you consider the entire traffic control picture from city to city and the location of airports at a particular city. There is an optimum arrangement. Any time that you depart from this optimum arrangement, for whatever reason, noise abatement, for example, you are operating at less than optimum and therefore you are in a sense reducing the maximum safety because you have introduced certain complications that have to be coped with. The way air traffic control copes with it is frankly by reducing the amount of traffic. Nevertheless, the demands are there, the flights want to go, and traffic control does everything it can to accommodate them. When they are restricted through these special provisions I am afraid I must say that this does have a safety consideration.

Senator MONRONEY. Thank you.

Mr. McDermott. The extensive near-miss reporting program which gained such prominence earlier last year entails considerable work on the part of controllers. The gathering of facts and preparation of detailed reports requires untold numbers of controller man-hours.

Radar, one of the most versatile tools ever provided the controller, has added to his responsibilities. The mere fact that the controller now has a device which presumably allows him to "see all," has prompted the incorrect presumption that the controller can now "do all." Radar in its finest form is radically different from any televisionlike picture. It requires interpretation of display, manipulation of controls, and a clear understanding of its limitations before one is qualified to utilize it for control. It has permitted controllers to do near-miraculous jobs—but it is not a miracle machine, and does not make the controller a miracle man. While it has enhanced the capabilities of air traffic control, radar should not be regarded as a cure-all, nor as reason in itself why controllers should be considered in a position to automatically prevent all accidents.

Radar has also brought new duties to the controller. In addition to the traffic information service available through radar, controllers utilize radar to monitor instrument approaches made on other radio navigation aids, including the instrument landing system. The radar has also provided means whereby controllers aid pilots seeking to avoid severe weather conditions. Even the introduction of airborne weather radar in aircraft requires the assistance of the air traffic controller to make possible full benefits of the system. Pilots observing severe weather on the airborne radar must obtain air-traffic-control clearances prior to deviating from their routes to avoid the weather. Controllers must assure that all traffic is protected during the rerouting process and that no conflicts will result.

As though his job were not complicated enough, and demanding enough in terms of stress and pressures brought on by expanding volumes of high speed traffic, at times intermingled with slower speed traffic, with new types of aircraft from rotorcraft to turbojets, with new and ever-changing procedures and regulations, with greater demands for more service of all kinds, the controller faces one more problem—perhaps the one that plagues his every move more than any other. It's the legal problem.

It is becoming increasingly important that the controller concern himself with an understanding of the legal potential that can or might stem from any one of his actions. New procedures, even the words to be uttered by controllers, are carefully examined for possible legal boobytraps. It was not always this way, but developments of recent years forces it upon us. There is a growing tendency to look to the Federal Treasury as a form of insurance stemming from air accidents. Increasing numbers of damage to life and property that restitution might be obtained from the Federal Government. Whether air-traffic control has abided by the prescribed manuals and procedures is sometimes secondary to the question of whether air-traffic control has discharged unwritten moral obligations or responsibilities.

The controller who issues traffic information in accordance with all the rules might be later asked in a court, or a hearing, "Why did you only issue traffic? Why didn't you do more?" Never mind that the rule books prescribe it that may—and for a very good reason—but why didn't the controller do something else?

The controller who seeks to increase safety and at the same time help a pilot who reports that all his navigaiton lights have gone out during a night flight in a busy terminal area, attempts to steer another aircraft around the troubled plane. As a result, he finds himself in a hearing defending his right to take such action.

The controller who issues taxi clearance to an aircraft preparing for departure notices that the pilot takes off without further clearance. Since the controller had not told the pilot not to take off, there is nothing that can be done about it. It is legal to take off if you are not told not to, but it becomes illegal to take off if you are told not to. Sounds complicated? It is. But that is traffic control, and today controllers must add the extra words to compensate for this loophole in the rules.

A controller advises the pilot of an aircraft A in the traffic pattern that there is other traffic in the area, and identifies and locates that other traffic. Three separate warnings are issued by the controller. Operating in clear VFR weather conditions, during which pilots have the direct responsibility for collision avoidance, the aircraft A collides with the other traffic of which he was warned by the controller. The aircraft owners sued each other and the United States. ATC was held to be the sole cause, since it was presumed that both pilots were exercising the ordinary care required by law. Thus, damages are recovered from the United States.

A controller, noting that a foreign pilot of a high-performance fighter aircraft failed to comply with instructions to enter the traffic pattern, issued alternate instructions to avoid a conflict with a transport aircraft on approach to the runway. Still noting the lack of compliance by the fighter, the controller issued further specific instructions, adding that the fighter aircraft was to be No. 2 to land following a specific DC–4 ahead and below. Since the pilot of the fighter made no effort to comply, the controller then sought to turn the airliner away. Immediately following the controller's instructions, the transport started turning, but the fighter bore down on the DC–4, slicing the plane in two.

The accident investigation placed blame on the foreign pilot. But the damage suits which followed for years afterward, in the U.S. courts, placed the blame on the controller for simultaneously clearing both aircraft to use the runway. The controller's clearances and instructions never authorized the fighter to land at any time, but merely advised the pilot that he was No. 2 in the landing sequence following a specifically identified and located aircraft. The procedure is still in the books today, and is used hundreds of times a day. But the precedence on the lawbooks is also being used daily. The controller had but a few seconds to analyze the situation, decide and act. The court had an abundance of time.

Because of objections from pilots, the word "instruction" has gradually been removed from the controllers' manual of procedures. It has, however, remained in the Civil Air Regulations, part 60. The question has now been raised as to whether controllers issue instructions, or whether they issue clearances, or both. How does a pilot recognize the difference, and when may a controller instruct rather than clear? The matter has been argued for the last 2 years. Meanwhile, controllers go on issuing whatever it is they issue, and pilots for the most part comply. I am very happy to note Mr. Dave Thomas

has released a proposed rule change to Civil Air Regulations which will definitely clarify this situation. This is open for comments until March 18. I think this point will be clarified.

Senator MONRONEY. Let's try to get an example of this. If a pilot asks for a change of altitude in flight he calls air traffic control and they say, "You are cleared to go from 10,000 to 14,000." Is the difference there between clearance and instruction important, so that if he is cleared he could automatically stay at his former level if he found turbulence and could come back to it, or if he were instructed to go to that altitude, that his whole flight plan had been changed and that the only altitude at which he could proceed is 14,000?

Mr. MCDERMOTT. The real problem I don't believe arises in the situation where the pilot has requested a change. If I might give one typical example, and maybe Mr. Parish can give more graphic ones.

The real problem has been situations where controllers observe two flights converging on two different airways, both at the same altitude, and have recognized this in ample time to do something about it. The controller issues a clearance to one flight to change altitude because within 30 minutes or so they will converge if they stay at the same altitude, and there will be a confliction. He issues a clearance. The pilot comes back and says "Why do I have to change my altitude? What is my traffic?" So the controller tells him "Your traffic is another flight with which you are going to converge at this next fix." The pilot says "I like this altitude, change the other fellow's altitude." Time has now shortened to perhaps 15 minutes. So the controller, rather than pursue a lengthy debate, goes to the other pilot, clears him to change his altitude. And this pilot might say "I like this altitude, too." Sometimes they are monitoring the same frequencies and this gets to be a little difficult. "You told that other man to change first, now why do you make me change?" There have been instances when this kind of debate has gone on to the point where, in fact, there was less than legal separation before the matter was resolved and one pilot gave way.

I can't discuss the legal implications, but if the controller has the authority to instruct a man, if his clearance is interpreted as instructions, that this is something you must comply with and then ask questions, the controller will certainly have a more powerful tool with which to do his job.

Mr. PARRISH. I think you have covered it pretty clearly. In a situation, to follow up on what Frank has just said, you arrive at the end of your line when you have to say to a pilot that "If you proceed beyond this point without complying with this clearance, you do so without the benefit of a clearance." This point we don't like to get to. We like to resolve it long before we get to this.

Mr. MCDERMOTT. I am sure that by March 18 comments received and considered by the FAA will more than adequately resolve and clarify this.

More often than not, the controller is the target of some form of criticism, perhaps from a pilot who wants to know why he wasn't vectored around that traffic, perhaps from an airline that wants to know why its flight was delayed, or perhaps from a housewife who feels that the controller intentionally caused that last aircraft to fly

noisily over her house and awake the babies or disturb that TV program. But there are some times when a controller receives a commendation for a job well done, or even a "thank you" from a pilot to whom special assistance has been given in an emergency situation. Occasions such as these provide a controller with the true reward of his labors. As a controller, seldom do you ever get to know the fellow you have helped, and perhaps you may never get to talk to him, or you may never hear from him again. But to know that you, through your own special skills, experience, knowledge, personal resourcefulness, and with the teamwork and help of your colleagues, have saved a life, a group of lives, or a valuable aircraft, is a sense of satisfaction and pride beyond explanation. It won't pay the family grocery bill, or the rent, but it's a wonderful, warm feeling to go home with.

Senator MONRONEY. I have noticed in the last year or so, however, that there seems to be a conscious effort on the part of the controllers—they were always courteous—to go a little bit beyond courtesy. Instead of being the rough, gruff, traffic cop of the air they are adopting the air of being a friend in need. I have often heard a soft answer turn away a hostile growl as to why a small plane was given clearance before an airliner, and the controller says, "It goes by the order of precedence in reporting in, and this is the rule." Usually the pilot will say, "Thank you very much, I merely wanted to know."

I think it is growing, and I think it is a conscious effort apparently on the part of your organization and your members to establish a rule of courtesy in addition to the normal demands of plain information or blunt conversation.

Mr. MCDERMOTT. I certainly agree with you, Mr. Chairman, and I think it is a part of this evolution into a technical profession. The traffic control occupation is truly complex and is assuming all the proportions of a profession. I think that the traffic controllers have in past years perhaps adopted these professional tactics, these professional methods in dealing with their clients, and I think it is a very wonderful thing and something of which they can be proud.

I was very happy yesterday to hear Dave Thomas comment upon this remarkable save in Baltimore where the controller led this aircraft which was completely out of gas to an unlighted field. As you may be aware, this controller was selected by our Association for the Controller of the Year Award, which was made at our last annual meeting at the Biltmore Hotel in Oklahoma City. This award was presented by Arthur Godfrey. Arthur Godfrey at that time invited the controller and the pilot to appear on his radio program, and tomorrow Mr. Parkinson, the controller, and the pilot, will go to New York and tape a broadcast with Arthur Godfrey that will be heard in a week or so.

At this same meeting in Oklahoma City the Chicago Midway tower was awarded the title Facility of the Year for 1959. It now appears that they are trying very hard to clinch the title for 1960.

On January 9, if I may digress once more, a Cessna aircraft took off from a small airport in the vicinity of Chicago, on a VFR flight to Omaha. He proceeded west until he ran into some weather and prudently turned around to return to Chicago. By the time he arrived in the vicinity of Chicago the weather was a 900-foot ceiling

and the pilot discovered that he had only 20 minutes of fuel remaining. With a swarm of aircraft in the air, three radars, O'Hare, Chicago tower, and Chicago center were unable to identify this flight. They did get direction finder bearings from the two towers which eventually located him southwest of the city.

An American flight was about ready to take off from Midway and volunteered to look for this airplane when he got on top, with a rather low deck. The American aircraft spotted the Cessna and led the Cessna to a point where the radar was able to identify this aircraft. Radar then vectored the aircraft to the point where it was turned over to the Midway tower which brought it in for a landing. He touched down 24 minutes after the pilot advised he had 20 minutes of fuel remaining. I think the remarkable part about that is that during this hour there were 10 aircraft delayed a total of 90 minutes, but during the hour that this took place there were 63 operations conducted at the Midway Airport while they were saving this aircraft which ran out of gas.

Aviation generally gains headlines through disaster, and the controller has had his share of such publicity. Rarely is the public aware of the extent to which air traffic controllers, in addition to their normal job of separating and expediting the movement of traffic, render some form of special assistance that results in the saving of lives and aircraft or property on the ground. ATC may be an expensive service in terms of taxpayer's dollars, but the return on the investment in terms of service to the Nation, in lives and property saved, make it a good investment. Perhaps a few examples here will serve to illustrate. I wish to point out, however, that we have no desire to cause any embarrassment to pilots or operators of the aircraft involved, and for that reason, no identities are given.

Case No. 1: A pilot on an evening flight requested landing instructions. Following receipt of routine initial clearances, the pilot advised that his position was uncertain, his navigation equipment inoperative. Through a combination of direction finding bearings and radar guidance, the plane was located and directed to a safe landing. In reporting this, the controller called this "a minor type save."

Case No. 2: A jet trainer at 41,000 feet declares emergency with possible fire on board, and gives his position as 80 miles southeast of the airport. Utilizing established techniques, the controller identifies and locates the aircraft on his radar 45 miles northwest of the airport. Meanwhile, coordination is being effected with the cognizant ATC facilities in the area concerning other traffic. All altitudes within 40 miles are heavily congested up to 8,000 feet. The reported weather at the subject base is measured ceiling 200 feet, overcast, visibility 1½ miles in rain, and this is below the instrument approach minima. A nearby airport has about 100 feet additional ceiling and ½ mile additional visibility, but lacks GCA equipment. To further complicate the situation, the instrument runway at subject base is undergoing construction work, and no other runway is suitable for GCA. Through prompt coordination with proper officials, it is determined that the runway can be opened.

Fire and emergency crews are alerted while the jet is being gradually descended under radar guidance, to avoid all other traffic in the area, many of which were conducting conventional approaches at the nearby

airport. The pilot, who had earlier indicated he would bail out, has decided to proceed with the controlled approach. Upon reaching 3,000 feet, pilot advises that all his navigation equipment has failed, and he is depending entirely upon the controller's guidance. The flight is turned on to final approach, GCA takes over, and a safe landing is made. The pilot later reported that he broke out of the clouds at 100 feet above ground, and could not under any circumstances have pulled up to go around. He had to land on that approach. Controller's remarks: "Traffic was not delayed nor was any traffic diverted at any time during this emergency."

Case No. 3: A fully loaded turboprop passenger plane reported that practically all instruments were inoperative, and those remaining in operation were considered erratic. Consequently, exact position of the flight in a busy terminal area was not known. Through use of radar, the plane was located about 27 miles from the airport. Under radar guidance, flight was descended from 12,000 feet, keeping it clear of other traffic, and a "no-gyro" radar instrument approach was given by the controllers, utilizing both surveillance and precision radar. A safe landing was made without further incident.

Numerous other cases have been reported from time to time, but we recognize that the reports we receive represent only a very few of the many instances wherein ATC has rendered valuable assistance to aircraft. Many cases might be even more dramatic than those cited here, but it is our purpose to show the value of ATC, not the most dramatic. The limited number of reports we receive would indicate that both civil and military controllers are responsible for saving hundreds of lives and millions of dollars worth of property and aircraft during the course of a year.

The foregoing, we feel, gives some insight into the vital contributions to aviation safety made by our air traffic control system and its controllers, both in the FAA and in the military services. The profession is proud of its service to the Nation. But the profession feels justified in asking that proper recognition be given to it, so that the air traffic controller might never again become the forgotten man of aviation.

We have here detailed the vital role of air traffic control in aviation safety. I would like to close with the statement that a substantial contribution to the continued safety of aviation through air traffic control can be made by this Congress through enactment of legislation establishing an attractive career professional service in air traffic control which, in the words of your committee in its Report No. 1811, would provide, among other things, "strengthening of the air traffic control service through special pay, retirement, and other incentive measures." Such action would, more than anything else, be a most profitable investment in the present and futuer of aviation, and allow the air traffic control safety record to keep pace with the fantastic growth of aviation.

I cannot close without the comment that the Air Traffic Control Association has in the past worked directly with FAA, and will continue, in the future, to work directly with the Federal Aviation Agency on air traffic control matters such as discussed in this testimony. This relationship has been carried on in a most constructive manner, and I am convinced it has been mutually beneficial.

May I add just one comment, Mr. Chairman.

The relating of these incidents is not to be construed as a mere recitation of exploits of controllers. I think the main point is that the sustained tension and stress are definite safety hazards, and technological improvements are not likely to improve these conditions, and these improvements will expose the controller to more and more aircraft. It is clear to me that this human resource is being expanded at an abnormal rate. The future safety of aviation demands that proper consideration be given now to compensating for this extraordinary situation.

I certainly thank you for the opportunity to appear before you.

Senator MONRONEY. Thank you for this very informative and constructive statement.

Two or three things I would like to ask about.

We recognize, of course, the problems of an association which represents exclusively Government employees. There is always a tendency toward uniformity because your members move, as in the Post Office Department from light tasks in one post office to very heavy tasks in another, and yet their organizations are asking for uniform pay for these same job classifications although the duties are less.

I am so concerned with exceeding the stress and strain a human being can take over the years that I am compelled to say that I hope in facing this problem your association can be aware of the fact that we will have to make differentials, depending on the stress and the strain in certain instances. I am concerned about the 8-hour day that they must work without a break, even to the point where, they do not seem to be able to take a luncheon break or coffee break as most other Government employees, including members of the Senate do, and, hence, prefer to work a straight stretch. I am wondering if the 8-hour day and the three-shift feature for these terrible heavy traffic airports could be broken down to four shifts, and even a shorter work week utilized for the same pay. I think we have to consider the human factor and the working problems that you face. But we cannot begin to provide at La Guardia or at Washington National or Chicago Midway a four shift basis and at the same time allow a control tower elsewhere which has a minimum of takeoffs and landings to have the same working arrangements.

This should be, and must be, a rescue operation from intolerable circumstances of human endeavor.

I would like your ideas in this context. Would it help if four shifts were granted instead of three shifts, so that a controller would not be on a 5-day workweek with this terrible strain he must endure for 8 hours for 5 days a week?

Mr. MCDERMOTT. First of all I would like to say that the association has done a considerable amount of work and has come up with some recommendations which we propose to submit. We have submitted them to the Federal Aviation Agency and are prepared to submit them in testimony when the legislative plan for personnel comes up.

Our proposals further recognize that there cannot be just one standard of pay and one standard of working conditions which would apply to all traffic control facilities. We made this very clear in our recommendations, this recognition that certain facilities, certain

traffic loads require certain considerations. This has been accepted. This was the sincere feeling of all of our membership from the busy as well as the less busy facilities.

As to what the real answer is, whether it is a 6-hour day, 4-day week, I am certainly not prepared to say. I think it is something that we can get an answer to very quickly. I think it is a problem that should be studied. I believe the FAA wants to study it now, and, as I said, when we have the resources within our own association this is certainly one of the areas which we would devote these resources to when they are available. Meantime we have to do it on a sort of voluntary basis, as our members in the field study these problems. I think these answers can be obtained. We certainly want to help.

Senator MONRONEY. We are very careful in recognizing pilot fatigues as being dangerous to air safety. A pilot may have the lives of 50 or 75 passengers in his hands, but during an average day you people run up into perhaps 50,000 that come in.

I would like to have some figures on that, what the average controller has at a busy airport, and the general transport capacity of the planes which he is landing. If we recognize the danger of fatigue in the pilot himself who is responsible for only one plane then, with this long 8-hour-a-day stretch, with the hundreds and hundreds of planes, it seems to me that the fatigue problem is just as great or greater with the controllers. Now, with the limitations restricting pilots as to number of hours they may fly, some similar consideration should be given to these controllers at high density traffic areas.

Mr. MCDERMOTT. We feel that our membership is well aware of this because they live and breathe this 8 hours a day and talk about it in the 16 hours off duty. When they are sleeping, I understand some of them talk in their sleep about it.

We are confident that if this problem is subjected to scrutiny which has available medical and other research channels, that the problem would be just as clear to everyone else as it is to the controller himself.

Senator MONRONEY. I have talked to many of the air traffic controllers who have long periods of service. They are also worried that one of these days they may have real trouble on a physical—and I understand they have to go through a physical once a year, meeting the same standards that a pilot must meet as to sight and hearing—is that correct?

Mr. MCDERMOTT. Yes, sir.

Senator MONRONEY. And they come up sometime with perhaps a defect in depth perception, where eyes are below minimum. We questioned General Quesada about it. He said he was hopeful that his Agency would make available good transfers within the Agency itself to such men who, after continued service in this field, because of failure of eyes or ears, find it necessary to accept a transfer. General Quesada hopes to do this without downgrading him to mere menial tasks where no use of his service could be continued.

I sincerely hope that will be the case and I am sure that your fine organization would like to have such consideration in transferring after these unavoidable things happen.

Mr. McDERMOTT. Certainly the air traffic control people were happy to hear Mr. Quesada say that yesterday. I think this requires even further study, however, because when you are faced with a situation where perhaps half the personnel of an agency are in one particular category, such as air traffic control, it might be, I think it would be, difficult to attempt to place the burned-out traffic controllers in other parts of the Agency on a wholesale basis.

Senator MONRONEY. It depends on how fast they burn out, of course. Apparently the school for training is going to not only continue to grow but continue to get more complicated. It seems to me in this field particularly there is an opportunity where the instruction and training of new men, by these men who have long and varied experience, might be useful and helpful.

Mr. McDERMOTT. These are some of the answers we hope to obtain now while the average age of the traffic controller is in the early thirties and not wait until the traffic controllers are in their late forties or fifties and then be faced with a wholesale turnover or burning out.

One example that I believe was cited yesterday is the controller who was on duty when this Capital aircraft collided with the National Guard plane, and who was hospitalized and out of work actually for over a year, and is now back working with the Federal Aviation Agency in an administrative job. Unfortunately he is having difficulty in obtaining reimbursement for the several thousands of dollars of medical bills that he accumulated during this period that he was off. I think that the Agency is working with him in trying to adjust this thing. I am very happy that he is now back at a productive job, even though it is not air traffic control.

Senator MONRONEY. We thank you very much for your very helpful statement. We will be looking forward with great interest when we take up the bill which the FAA Act directed the administration to do to bring up the new rules and new legislation for the integration of military and civilian controllers with proper references to security, tenure, and benefits that might ensue from their giving up their right of quitting the job or walking off these critical jobs in time of war.

We were very happy to learn after the false story was printed that this would be a military organization, that it now apparently will be in the context of civilian employment with certain guarantees of wartime benefits, perhaps, and compensation for the exchange of the controllers' right of free movement away from the job in time of national emergency.

Mr. McDERMOTT. We look forward to testifying at that time.

Thank you very much.

Senator MONRONEY. Thank you. We look forward to it.

Is there anything that any of the other witnesses would like to add?

Mr. McDERMOTT. I don't believe so, Senator.

Senator MONRONEY. Thank you very much.

We will hear our next witness, Mr. William K. Lawton, executive director, National Business Aircraft Association.

We are happy to have you, representing your fine organization, back again. I appreciate the help you so freely and conscientiously have given this committee in its aviation problems.

## STATEMENT OF WILLIAM K. LAWTON, EXECUTIVE DIRECTOR, NATIONAL BUSINESS AIRCRAFT ASSOCIATION, INC.; ACCOMPANIED BY RICHARD GROUX, ASSISTANT TO THE EXECUTIVE DIRECTOR, NATIONAL BUSINESS AIRCRAFT ASSOCIATION, INC.

Mr. LAWTON. Thank you, Senator Monroney.

For the record, I am William K. Lawton, executive director of the National Business Aircraft Association. Seated on my right is Mr. Richard W. Groux, assistant to the executive director.

I want to thank the chairman and the committee for this opportunity to appear, to talk briefly on air traffic control. In prefacing my written remarks, I would like again to join with others in paying tribute to the air traffic controllers. We have long and often praised them for their efforts and their dealings with pilots, particularly those in the general aviation fleet, business aircraft, private pilots, and so on.

National Business Aircraft Association, Inc., is a nonprofit and independent aviation organization founded in 1947 as the Corporation Aircraft Owners Association and incorporated under the laws of the State of New York.

It was organized to represent the aviation interests of those persons, companies, corporations, or other forms of business enterprise who own and operate aircraft as a normal part of their business or industry and to those engaged in supporting the operation, servicing, and manufacture of business aircraft.

Among the fields in which NBAA is concerned are: Improvements in airways and airports, better weather service, expansion in communications and air navigation facilities, higher standards of airport services, improved aircraft parts distribution, equitable tax rulings for business aircraft operations, greater recognition of the airplane as a necessary tool in modern business and industry, better air traffic control procedures, professional status for qualified business pilots, and aircraft designed to meet the special requirements of business flying.

Our national headquarters is located at 344 Pennsylvania Building, Washington 4, D.C.

This association notes with satisfaction the progress being made during the past several years by both the former CAA and the present FAA in the general areas encompassed by air traffic control. The progress that has been noted has, however, been based on a system which is rapidly outgrowing its validity and usefulness.

We refer to the past and presesnt concept that all instrument traffic receiving full instrument flight rules separations must be conducted along narrow bands of designated civil airways.

This channelization of instrument air traffic has resulted in severe penalties to all types of military and civil aircraft which engage in instrument flying and who desire the maximum protection and safety afforded by complete separation standards.

We recommend that Congress take the appropriate steps both in policy direction and in budgetary support to enable the Federal Aviation Agency to take immediate and full-scale research and development steps which will result in a system of aircraft separation in all types of weather conditions from the clearest day to the foulest night.

Until such an all-type-of-weather traffic separation system is developed and one which can be used by all types of aircraft and all types of pilots, air traffic control will constantly remain the bottleneck in the orderly development in the use of aircraft by both the civil and military.

This concept of area traffic separation as opposed to airway traffic control must be made a priority item if air safety for all types and classes of aircraft users is to be considered.

In the past 3 years our domestic civil aircraft inventory has increased by some 15,000 aircraft. The rate of increase of about 5,000 aircraft per year will continue, it is believed, for the next decade. The significant factor in this rate of increase is that these aircraft are being bought by private individuals and by business organizations, for a wide variety of uses. The rate of increase, if any, in the civil air carrier and military fleets is negligible in unit numbers.

To handle this increase in air traffic it becomes mandatory to take immediate steps to devise a system which will free air traffic on instruments from being circumscribed to narrow width routes. It is necessary to make immediate plans to provide safe separation for all aircraft regardless of weather conditions at all places in the navigable airspace.

Several methods and techniques to make area traffic separation available to all users of the airspace and to provide safe separation standards in all navigable airspace for all aircraft regardless of weather are being examined by the FAA.

We believe that the FAA should give the greatest support and direction in this program of area traffic control and that the program should be made one of the top priorities in the FAA.

Concurrent with this air traffic control enlargement into an area traffic separation system, the FAA and Congress must provide for an orderly and rapid development system of airports which can accommodate the increasing volumes of air traffic.

A system of satellite airports with instrument approach facilities must be tied into all air traffic control solutions. The relationship of airport approach capacity and en route air traffic control capacity is direct and inescapable.

Unless such an area air traffic separation system is placed into being within the next few years, and with it a satellite airport development program, the use of aircraft both by the general public traveling by air carriers and by the private aircraft owner will become economically undesirable and will raise serious air safety threats due to the large volumes of aircraft competing for the use of the same airspace and airports.

We must take immediate steps to free our limited airspace and to use it wisely. The artificial barriers of airways which circumscribe aviation activity must be broken down if a safe and healthy advancements is to be recorded by all forms of aviation.

Senator MONRONEY. Thank you, Mr. Lawton.

A major problem, then, involves the bottleneck of flight patterns over airports?

Mr. LAWTON. Over "airports," instead of "an airport," which we are now faced with in the majority of situations.

Senator MONRONEY. So our airport system must be enlarged.

Mr. LAWTON. This is hand and glove with the concept of area traffic control. Without one, the other does not become feasible or possible.

Senator MONRONEY. I remember the strong support you gave this committee in your efforts in the Congress to face realistically the needs of our national airport system for rapid development and expansion. Certainly no one could have been more effective in urging Congress to do so than you and your organization.

But lacking that as a base, about all we can do at the moment is to increase the research and the technical knowledge of how we can install more airways or, as you suggest, area traffic control rather than channeling it into the various airways that we now have. Is that not correct?

Mr. LAWTON. That is correct, Senator. There are several known systems which are, as I have indicated, being looked at by the FAA. The order of priority is not known to me. But I suggest that if we are going to survive the increasing volume of air traffic, we must abandon this concept of keeping them on superhighways.

We were faced with the same thing with the automobile, where years ago the highway capacity was greatly in excess of the automobiles. What happened to the pleasure driving? This has been lost because we are faced on the ground with a two-dimensional operation. In the air we are not. We have three dimensions and we are not using them wisely. This is why I bring this to the committee's attention in the hope that their direction and concurrent support in budgetary matters will give FAA this needed direction.

Senator MONRONEY. Interfering again with your area controls rather than your airway controls will be the problem which this committee also has under study and open for discussion on airspace in general. For instance, air traffic would be impossible between Washington and New York with the volume and amount of airspace reservations that exist between here and New York, would it not?

Mr. LAWTON. This is true. FAA has taken significant steps. They have reversed the trend formerly noticed through the former military domination, I might call it, of airspace.

Senator MONRONEY. Preemption?

Mr. LAWTON. "Preemption," I think, would be a better word. Thank you.

This has been reversed through the efforts of the FAA. But the volume of traffic, let us say, between Washington and Baltimore, is because the provisions for safeguarding this traffic are between these two points.

Now, let us assume that we had an area traffic control system in effect. The people desiring the straightest line would be given it in the order of priority. But those who desire to fly parallel to the airways would be able also to fly without being held on the ground waiting for a slot in airspace.

Another reason is that the great number of pilots desire to go, let us say, to a point north of Baltimore to land. The only way they can be accommodated under this IFR channelization is to participate on this one highway between New York and Baltimore in order to get a little bit north of there. Whereas under area traffic control system they could take off and fly a parallel route and with complete protection.

Senator MONRONEY. You have to start from where you are. Would you extend and widen this airway, for example, with perhaps instrumentation so that one plane could fly direct on the beam, another could fly a mile to the right, another 2 miles, and so on, so that all traffic moving to the right of the beam between here and New York could fly in channels off of the present airways, with proper instrumentation as to how far they are off, and then follow that beam?

Mr. LAWTON. No, sir. I think what we have in mind goes far beyond this, that in effect there will not need to be an airway prescribed by law. There will be natural traffic flows which will build up and tend to create this, but there will also be a great diminishing of this amount of traffic because people don't desire to fly between these two points.

There is a terrific amount of random flying, as it is called, as opposed to following the airways. It is now being flown under IFR conditions which to our mind are not conducive to safety.

There are systems, for example, such as SAGE, on which millions of dollars have been spent by the military, which permit random flying with complete surveillance and protection. There are other systems under study that, for example, have been produced by International Business Machines which would permit the pilot, through the use of a very simple device in his airplane, which in effect would only need to transmit automatically the aircraft identification and its altitude, by triangulation from the ground of these impulses his course can be plotted, and through automation can be recorded.

Through existing computer systems all these courses of flight paths can be computed. They can be memory scored, they can be reviewed to see if there is a conflicting flight path. The conflicting flight paths will immediately be called to the attention of the controller who then goes back to the one or the other aircraft and gives him a canned message, which appears on the cockpit panel, saying "hold," "turn right," "turn left," "climb," or "descend." This is all that is needed under this concept. It reduces the pilot's voice communication to practically zero.

These systems are known and they are under evaluation. And they are the answer to the free use of the airspace which we are now being denied. We are working under a system which was developed back in the early 1930's. This is an innertube developed in the 1930's on which we have put punctureproof patches, one on top of the other, until we are now in a system where it is physically impossible in some instances to even participate in the system.

We have had instances of business aircraft desiring, for example, to fly from Boston to Idlewild where we have been told, just recently, ATC, or Idlewild tower, will not accept any traffic into the airport, and later this was changed to New York will not accept any traffic into the area. This is the result of our putting patches on a system that is 20 and almost 30 years old now, and it is time for a change.

I think that the change has to come from the direction sponsored by the user organizations. I think this is an appropriate time to call this to your attention, sir, in the hope that we can gain your support.

Senator MONRONEY. What you would like to see, speaking for the business aircraft, would be a higher priority, perhaps, or one of the highest priorities with a research and development center and finding ways to enlarge the navigable air channels or area channels.

Mr. LAWTON. That is correct.

Senator MONRONEY. Do you have anything further?

Mr. LAWTON. No, sir.

Senator MONRONEY. We appreciate your fine statement and your advice in this matter.

The committee will stand in recess until 2:30 this afternoon.

(Whereupon, at 12:02 p.m., the subcommittee was recessed, to reconvene at 2:30 p.m., the same day.)

AFTERNOON SESSION

Senator MONRONEY. The Subcommittee on Aviation will be in session.

We have this afternoon as a witness, Mr. Joseph B. Hartranft, Jr., president, Aircraft Owners & Pilots Association, here to discuss with us the matter of air traffic control and airspace management.

We are happy to have you back, Mr. Hartranft, and suggest that you proceed in your own way, identifying for the record your two assistants.

## STATEMENT OF JOSEPH B. HARTRANFT, JR., PRESIDENT, AIRCRAFT OWNERS & PILOTS ASSOCIATION; ACCOMPANIED BY MAX KARANT AND VICTOR J. KAYNE, AIRCRAFT OWNERS & PILOTS ASSOCIATION

Mr. HARTRANFT. Thank you.

Our best efforts to comply with the chairman's request of yesterday to combine the second and third sections of our testimony has not accomplished this end. However, if consolidation of schedule is still desired, we feel we can combine the third and fifth sections of our testimony. In other words, this will combine airspace management and military posture in the FAA; we would be glad to combine those two. They are both relatively short and we will be prepared at our next appearance to cover both of those subjects if that will help.

Senator MONRONEY. Whichever you feel will be most effective. I understand that you cover air traffic management and air traffic control in the principal part of your statement. Then you deal in this same statement with the matters of airspace reservations and airspace allocations?

Mr. HARTRANFT. No, Mr. Chairman. Our testimony today will be limited to air traffic control. I am suggesting that if you still desire us to combine, that we can combine the airspace management with the military posture at a later date, the next time we are up before the committee.

Senator MONRONEY. However you wish to do it.

Mr. HARTRANFT. I understand. We will double up on those two categories. That will leave section 4 on pilot qualification and certification, and our testimony on that subject will require a more lengthy discussion.

Senator MONRONEY. Military participation is, I think, after the pilot qualification.

Mr. HARTRANFT. Yes, it is.

Senator MONRONEY. The airspace will be before the pilot certification.

Mr. HARTRANFT. Would you prefer that we keep them separate?

Senator MONRONEY. It would be more helpful for the record. Off the record.

(Discussion off the record.)

Senator MONRONEY. Back on the record.

Mr. HARTRANFT. With me today are Mr. Max Karant, one of our AOPA vice presidents, on my left, who has been introduced to this committee previously. On my right is Mr. Victor J. Kayne. Mr. Kayne as you will recall is a man of 25 years' experience in both domestic and international air traffic control work, of which 12 years was spent with the CAA. His experience covers both operational and administrative responsibilities. He was chief of the old Washington-Hoover Airport tower, chief of the Washington National Airport tower, and his other responsibilities include the post of Assistant Chief, Airways Operation Division, CAA, which was in charge of all traffic control.

Mr. Kayne, who will now open our presentation on air traffic control matters, is director of policy coordination on AOPA staff organization and our specialist on air traffic control matters. I will move over to the ground control position.

Mr. Kayne.

Mr. KAYNE. Mr. Chairman, the Aircraft Owners & Pilots Association appreciates the invitation of this committee to appear before it with comments and recommendations pertaining to the control of air traffic in 1959 under the Federal Aviation Agency.

In our testimony on January 15, Mr. Hartranft indicated that the general aviation fleet comprises 96.2 percent of the country's total civil aircraft fleet. He also indicated that general aviation aircraft fly more hours each year than any other segment of the industry and thus are substantial users of the airspace. These flying hours are used for all kinds of business, industrial, agricultural, instructional, air taxi and pleasure flying. Business flying predominates. Without resorting to voluminous statistics, it is desired to briefly explore the relationship of general aviation operations to air traffic control. In fiscal year 1959, the last 12-month period for which we have statistics, Federal Aviation Agency control towers at 218 locations controlled a total of 26,812,001 operations. Of this number, in round figures, air carrier operations accounted for 7 million landings and takeoffs, the military accounted for 5 million operations and general aviation accounted for 14 million operations, or more than the military and air carrier totals combined.

The airlines use approximately 600 airports throughout the United States, however, the majority of their operations are conducted at the 218 airports at which the FAA operates control towers.

Mr. Chairman, this figure of 218 is based on the last statistical record. I understand since that time they have added about four facilities.

General aviation, on the other hand, conducts the bulk of its operations at airports other than the 218 with FAA towers. Figures are not available on the exact number of general aviation operations conducted at other airports, in fact, figures are not available on the exact number of airports and airstrips used by general aviation throughout the country. The Federal Aviation Agency lists approximately 6,000 airports that have been registered with their agency and it is common

knowledge that there are hundreds of additional private landing strips used by ranch, farm, industrial, and other operators. Private and business aircraft operating from these thousands of airports and airstrips all are users of the common airspace. The ratio of airports at which general aviation operates without control towers compared to those with control towers is approximately 50 to 1. This segment of general aviation contains the greatest potential increase in air traffic.

It is estimated that more than 95 percent of all general aviation operations are conducted under the visual flight rules on a "see and be seen" basis, requiring no handling by FAA air route traffic control centers. A brief explanation of the term "see and be seen" may be in order at this point since it has been used several times before this committee, and I am sure that it will be used again. In all controlled airspace other than the positive control route segments between 17,000 and 22,000 feet, and certain restricted area climb corridors, pilots of aircraft operating in weather conditions of 3 miles flight visibility or more have a legal responsibility to maintain a lookout for other traffic and to observe certain rules of the road to avoid collision. This responsibility is placed on all pilots without discrimination and is lifted only when the pilot gets into weather that prevents his seeing other aircraft. This is the foundation of the phrase "see and be seen." As I have said, more than 95 percent of general aviation's millions of operations are conducted on this basis.

The very small amount of general aviation traffic that operates under the instrument flight rules accounts for about 10 percent of the departure count of the FAA air route traffic control centers, the remainder being air carrier and military traffic. These centers handle only traffic on IFR flight plans, whereas control towers handle both IFR and VFR traffic.

This committee has heard recommendations for positive separation of all aircraft flying above 10,000 feet and other recommendations for the extension of positive control in every significant portion of the airspace occupied by general aviation operations.

To provide a better understanding of the subject matter at hand, "positive control" is defined as the method of air traffic control whereby the full responsibility for separation of aircraft, regardless of weather, rests with the air traffic control agency, without reliance upon direct visual observation of traffic by either the pilot or the controller. "Positive separation"—which is another term which has been used before this committee—has the same definition with only one difference—the controller is allowed to use direct visual observation of traffic. In either case, the pilot must have an instrument rating and the aircraft must have a full set of instrument navigation and communications equipment.

We also have heard FAA testimony that a radar beacon is required. Aircraft by the thousands and pilots by the hundreds of thousands do not meet these requirements and cannot operate in airspace where such restrictions are imposed.

Positive control has been the subject of much discussion between Government and industry and even between some segments of industry. The airlines, which have the necessary equipment and professional pilots, have advocated additional positive control, even though they, and the FAA, must be aware that this virtually would

eliminate general aviation from those portions of the airspace. Lest there be any misunderstanding, AOPA has recognized and approved the need for positive control at the higher altitudes where high-speed aircraft are operating and where reliance on the eyeball to see and avoid other traffic is of little help. On December 12, 1958, we informed Mr. D. D. Thomas, Director of Air Traffic Control for the CAA—then about to be become the FAA—that the Aircraft Owners and Pilots Association had no objection to extension of the positive control airways then existing on an experimental basis at high altitudes. This letter further reminded him of a discussion between us several months preceding that date wherein AOPA recommended that air traffic control procedures for the control of VFR traffic be developed for future consideration in any areas where it may be desired to provide positive control, and where general aviation would be seriously affected due to inability to comply with the imposition of IFR rules regardless of weather. These procedures would permit use of positive control in areas where it otherwise might not be practicable due to the penalty it would impose—but they never have been developed, to our knowledge.

This background of emphasis on positive control because of high speeds was what prompted our amazement when the FAA condoned the high-speed operation of B–58 and B–66 jet bombers at low altitudes, as previously entered on the record of this hearing.

Keeping in mind the nature and scope of general aviation operations, it may be seen that the present air traffic control system of the Federal Government, with its thousands of employees, is handling only a small slice of the total air traffic in the United States.

There is no compelling reason, either in the interest of safety in the air or to protect the public on the ground, that would require imposition of rigid controls on this vast majority of our air traffic.

Any program that would force large numbers of these operations into the Federal air traffic control system would overload the system and easily could cause its collapse. This situation very nearly came about following the bad series of airline collisions when both the military and the airlines voluntarily engaged in a program of filing IFR flight plans for large numbers of their flights, even though the weather did not require it.

The air route traffic control system, which was founded and staffed to expedite traffic and prevent collisions in bad weather, suddenly found itself handling peak traffic on good weather days as well as bad. This caused the departure count of the centers to rise from 1.5 million in fiscal year 1957 to 3 million in fiscal year 1958.

It also causesd many controllers to sacrifice their days off and to work overtime because of the additional workload during good weather, when they traditionally had been able to take leave and rest up.

The situation was so critical at one point, in our opinion, that AOPA warned its members to avoid unnecessary filing of IFR flight plans, lest the ATC system collapse. Very few people appeared to realize that the ATC system would have become hopelessly bogged down if only a small portion of the vast general aviation fleet had followed the example of the airlines and the military.

Since that time, the FAA has been able to add more controller personnel and the situation is no longer critical, even though delays in

the terminal areas are still a matter of concern to all aircraft operators.

Comparison of the overall personnel complement of the Agency with the number of aircraft handled over the past several years is interesting with regard to the ratio of increase. The following figures were obtained from the Federal Aviation Agency:

| | Positions | Tower count | Center departures |
|---|---|---|---|
| Fiscal year 1958 | 24,378 | 26,304,069 | 3,025,468 |
| Calendar year 1958 | | 26,599,719 | 3,273,901 |
| Fiscal year 1959 | 32,265 | 26,812,001 | 3,413,181 |
| Calendar year 1959 | | [1] 26,905,614 | 3,515,593 |
| Fiscal year 1960 | 37,433 | | |
| Percent increase | 53.6 | 2.3 | 16.2 |

[1] 11-month count, December estimated.

The primary reason for citing these figures is to demonstrate what the resulting requirement in terms of manpower might be if a positive separation or positive control scheme came into being that would require the FAA facilities to handle a fivefold or a tenfold increase in general aviation traffic.

Imagine the impact on the Federal budget. Imagine further the impact on the users of the airspace, where very few in general aviation have had any need for the expensive aircraft equipment needed to operate under the instrument flight rules of the Federal airway system.

Indeed, they have no need for this equipment in relation to the performance of their everyday business. Further, it has been estimated that not more than 15 percent of all of the 350,000 active civil pilots in the United States have an instrument rating, which is necessary for flights under positive control. This 15 percent includes all airline pilots, who have such a rating as a prerequisite to their work.

Extensive or widespread application of positive control would further require wholesale additions to the FAA budget for more equipment of all kinds, more maintenance, communications, installation and control personnel by the thousands, in fact, more of everything including a larger headquarters staff to administer this colossus.

The staggering cost of such a program and the penalties that it would impose on business and industry must be weighed against what tangible results it will buy in the safety field.

There is very little factual evidence, if any, that such a widespread regulation of flying throughout the United States is necessary in the public interest or would have any noticeable effect on the safety record or otherwise enhance aeronautical operations. To the contrary, experience with the wholesale filing of IFR flight plans by the airlines and the military following the collisions of several years ago revealed that operations were being excessively delayed by this synthetic IFR operation.

One sure result of this type of program for all aviation would be the addition of a substantial load to the cost of operating the Federal Government and to drastically cripple vital agricultural, industrial, and other business and pleasure flying throughout most of the United States.

This committee has heard other recommendations for a number of items in the air traffic control field, including minimum performance standards for electronic equipment for all users of the airspace. The folly of blindly recommending imposition of such standards for all airspace users may easily be judged in the light of various types of operations of which this committee has knowledge.

As you know, crop dusting and spraying is a very significant operation in many of our agricultural States. Can you imagine any earthly reason for applying this standard to crop dusting operations when most of the aircraft, for safety reasons, do not even have radio equipment on board?

Or we might consider the application of such standards to farm, ranch, business and pleasure flying that rarely, if ever, enter the IFR portion of the air traffic control system.

In short, there have been too many such sweeping recommendations that were unduly restrictive and absolutely unnecessary. Those that have opposed these ill-conceived plans have been labeled as "obstructionists" standing in the way of progress.

AOPA has been active for many years on various committees and groups wherein recommendations of this nature have been considered. In general, a thorough discussion of all pros and cons usually reveals that the proponents of such sweeping, all-inclusive plans have only limited knowledge of general aviation operations, and know very little of the true nature of our airspace use or how very impossible such plans are to implement.

In these discussions, we have made our position very clear; we will support minimum standards as they are required for safety or in the public interest wherever there is a reasonable showing of need.

We have supported reasonable standards for such things as the accuracy of radio navigational equipment for instrument flying and for certain types of equipment such as distance measuring equipment, which is known as a cooperative system whereby a malfunction can seriously derogate the operating of other aircraft equipment.

The public carriers, in the air as in other means of transportation, must have the highest and most exacting standards. These are not suitable or necessary for the operation of aircraft by the general public. Our position, therefore, is to recommend separate standards engineered to general aviation requirements.

The foregoing part of our statement has been directed at a better understanding of the position of our organization with regard to what we consider ill-conceived attempts to overregulate air traffic and tremendously expand the air traffic control system beyond what is required for safety or in the public interest. We strongly support legitimate expansion of the system and the imposition of reasonable requirements consistent with the factual evidence of their necessity, or the contribution that they can make to safety in the public interest.

While we are on the general subject of air traffic control, I would be remiss if I did not express before this committee the very great appreciation of the Aircraft Owners and Pilots Association for the very fine work that is being done by the personnel in the air traffic control facilities throughout the United States.

These men and women have been controlling traffic and handling our communications throughout the years with a dedication to service that is unique in the annals of civil government.

They have carried on their work through a series of administrators with no noticeable change in their zeal to serve the flying public. I have been actively engaged in and connected with air traffic control work for the past 25 years and I personally know many of these controllers and the conditions under which they work.

The press of workload and the tempo at which they must conduct their operations are at times unbelievable. Added to this is the ever-present heavy burden of responsibility wherein one small mistake might cost the lives of hundreds of people and destroy millions of dollars worth of property. Notwithstanding these conditions, the personnel manning the air traffic control centers, the towers, the communications stations, and radar facilities have produced a safety record and a record of public service that is nothing short of incredible. We cannot commend too highly these individuals who have labored so vitally and so effectively in the public service.

In speaking of the individuals comprising the air traffic control service, we wish to go on record as supporting improved working conditions for these people, including adequate compensation commensurate with their duties and responsibilities, and proper provision for retirement when they are no longer physically able to carry on the rigorous work of active control.

Assignment to administrative or supervisory jobs takes care of some of those controllers who reach an age or condition where they can no longer pass their physical examination or stand the pressure at the control board, but it cannot fill more than a small measure of the future requirement in this field.

There has been a considerable amount of discussion and speculation concerning plans of the Administration to provide a Federal Aviation Service within the FAA, similar to the Foreign Service within the State Department.

We are wholly in accord with some of the thoughts behind this idea insofar as they pertain to added inducement for personnel in this difficult profession, but we have been chilled by other expressions that have been made with regard to certain penalties which would be imposed upon personnel in this service, including a possible infringement of their civil rights.

We are strongly opposed to any suggested militarization of the air traffic control service or the provision that all or any part of the service may be placed under a military commander.

Responsible officials within the military department and the Federal Aviation Agency may well hearken back to the days of World War II, when the Civil Aeronautics Administration had employees performing a variety of air traffic control functions on military bases at home and abroad.

CAA personnel, operating as civilians and generally without the benefits afforded military personnel, handled military traffic and special missions in the Pacific, across the South Atlantic, the North Atlantic, through Alaska and into other areas where actual combat operations were going on.

All of these individuals volunteered for duty and we know of no case where they had to be forced to stay on the job. Any inference to the contrary is doing a grave injustice to the many civilian veterans who provided essential air traffic control and communications services outside of the United States throughout World War II. The only real difficulty encountered by the CAA during World War II was the drafting of its experienced controllers into the ranks of the military, where they most frequently were assigned to positions that did not take advantage of their air traffic control training and capability.

Adequate provision can be made to safeguard against a repetition of this mistake without sacrificing the civil liberties of this group of dedicated people.

Senator MONRONEY. I quite agree with you that they do not need compulsion but they need an even break in this service that is so vital, and this is one of the problems that this committee will have to look into.

In other words, many of these dedicated civilian control tower operators remained at their post and did the job that was more vital to them than perhaps their uniform duty of their associates would have been, and as a result found their rights were fewer because they had remained in civil employment and they could be bumped off jobs because of military preference given their fellow controller who had donned a uniform.

This is a problem which certainly must be carefully explored so that should a war occur, the men who stay with the job conducting their services for the great public interest will not be again penalized by lacking status in the Agency because they did remain where they were told to remain.

Mr. KAYNE. Mr. Chairman, I certainly agree wholeheartedly with your remarks. I have a very personal appreciation of what you said because during World War II I was in a responsible administrative position of the air traffic control system of the CAA, and I, along with many others, entered a number of areas where there were, you might say, hazardous operations going on.

We do so sometimes wearing a military uniform, but in civilian status. We ended up at the end of the war without veterans preference or any benefits that might accrue to a veteran.

I will say, too, that for every mission where we needed people, experienced people, to control traffic or to conduct these missions for the military, when we asked for volunteers we always had an overabundance.

We had difficulty sometimes screening them out to satisfy our people who were eager to take this duty.

To continue with the statement: This committee earlier heard testimony concerning the program of the Federal Aviation Agency with regard to provision of precision approach radars used in the air traffic control system.

As I recall, the testimony of the FAA indicated that their program for installation of precision approach radars included 22 locations. What was not said is that this is the total program of the Federal Aviation Agency and they contemplate purchase of no additional precision approach radars.

Senator MONRONEY. For the benefit of the record, and you might cover it later, give us the purpose of this. This is for GCA?

Mr. KAYNE. This is the military version referred to as GCA. FAA has a "PAR" designation on it, but essentially it performs the same functions as the military GCA.

Senator MONRONEY. This is precision radar that allows a control tower operator to talk a man down in almost zero-zero weather?

Mr. KAYNE. Yes, sir.

Senator MONRONEY. Telling him whether he is above the glide path or below it and coming in on a proper heading for safe landing on the runway?

Mr. KAYNE. Yes, sir. This is the one radar they have that gives altitude information along with range and azimuth.

Provision for such facilities now has been excluded from their airway planning standard No. 1, which provides the criteria for installation of airport traffic control and terminal navigational aids.

I quote from the Federal Aviation Agency, airway planning standard No. 1, dated July 1959:

> Precision approach radar (PAR) criteria was included in some former versions of airway planning standard No. 1 but has been excluded from this standard on a basis that FAA now has sufficient PAR's installed and programed to serve about 60 percent of the United States total air carrier passengers.
>
> The PAR locations include 17 of the 22 large traffic hubs plus 3 special-purpose locations at Indianapolis, Ind., Portland, Oreg., and Atlantic City, N.J.

AOPA has protested the criteria which use air carrier passengers as the sole justification for this radar. Our last letter to the Federal Aviation Agency on this subject, under date of January 6, 1960, objected to the use of air carrier traffic as the sole justification for installation of a Federal airway facility.

We pointed out that, on the average, general aviation pilots are less skilled than airline pilots and have greater need for precision approach radar than professional pilots. We again went on record as advocating additional PAR installations. Any pilot who has two-way radio equipment in his airplane and can keep the airplane right side up, can be talked into a safe landing by the operator of a precision approach radar without any other special navigational equipment in the aircraft. This contrasts with the use of the instrument landing system (ILS) wherein specialized and expensive navigation equipment is required in the airplane, and the pilot must have a relatively high degree of skill to properly follow it to a safe landing.

We well appreciate that a precision approach radar installation requires more personnel to operate and maintain than an ILS system, but its utility and lifesaving functions have many advantages over the ILS.

Another item of equipment which we wish to commend for increased emphasis in FAA budget considerations is the installation of very high frequency automatic direction finding equipment (abbreviated VHF/ADF). It should be installed at all locations where the FAA operates either an air route traffic control center, a control tower, or an air traffic communications station.

This device permits the man on the ground to automatically obtain directional bearings on any aircraft which can transmit to him and thus safely guide the pilot to the airport.

In the overall FAA program for provision of air traffic control radars, they have been developing a service known as VFR radar advisory service. This is not to be confused with the jet radar advisory service at the extremely high altitudes.

Essentially, the VFR radar advisory service provides traffic information and guidance to aircraft operating on visual flight rules in the area of radar coverage. This service provides a threefold benefit in that it provides traffic information so that the pilot may avoid potential collisions; it provides navigational advice when needed; and it helps the controller maintain the identification of all aircraft operating within his area.

At this point I quote from a letter that we addressed to the Federal Aviation Agency under date of October 30, 1959, with regard to VFR radar advisory service:

> We have used this service many times at a number of different locations and have found it to be extremely helpful. Without exception, the service has been good and has been provided in a very efficient and gracious manner. In addition to helping us in our VFR flights through the areas served by an approach control radar, we have the distinct feeling that having one additional pip identified as to altitude and communications channel also helps the controller.
>
> We are very appreciative of the service we have received through these facilities and we wish to take this opportunity to again place the Aircraft Owners & Pilots Association on record as very strongly recommending extension of this service to every facility that has functioning radar.

Senator MONRONEY. This radar that we are talking about now, where is it located?

Mr. KAYNE. This radar that we are talking about at the moment, Mr. Chairman, is that located in approach control towers. The same service, I think, could be developed and be an effective safety aid for the other facilities as time goes on.

The first step, however, is in the approach control facilities. FAA is working on this. They have several locations implemented. We are just urging them to implement more of them.

Senator MONRONEY. In other words, this is in an expanding program, while your GCA or PAR is being held static; is that correct?

Mr. KAYNE. Correct.

Previous testimony has indicated that radar is provided for the prime function of separating IFR traffic in controlled airspace. It was further indicated that provision of this safety service to VFR traffic should not be allowed to derogate the prime mission of the controller.

It was our understanding that the Federal Aviation Agency did not discriminate or indicate priority between safety services provided for any kind of traffic. Further, it was our understanding that appropriations granted by the Congress did not limit the use of safety devices or navigational aids to a particular class of traffic.

VFR Radar and Advisory Service is a safety service which should be provided as a regular part of the FAA air traffic control operation to provide safety for the flying public, irrespective of the type of flight.

Since airspace management will be discussed as a separate subject at this hearing, our remarks today will not go into detail on subjects to be covered at a later time.

Under airspace management we will discuss the actions of the Federal Aviation Agency with regard to the raising of control area floors

(Civil Air Regulation Amendment 60–14), which is interrelated to air traffic control.

To assist the committee in their study of this subject, we are making available copies of letters that we addressed to the Federal Aviation Agency on November 20, 1959, when we were urging the Administrator to implement this regulatory change on the schedule established by the Civil Aeronautics Board in 1958.

Senator MONRONEY. That will be printed at this place in the record.

Mr. KAYNE. Mr. Chairman, we did not necessarily request that they be entered into the committee record but we did wish them to be furnished to the committee for consideration.

Senator MONRONEY. Are they very long?

Mr. KAYNE. About three pages.

Senator MONRONEY. It will be printed in the record at this point.

(The letter referred to follows:)

AIRCRAFT OWNERS & PILOTS ASSOCIATION,
*Washington, D.C., November 20, 1959.*

Mr. E. R. QUESADA,
*Administrator, Federal Aviation Agency,*
*Washington, D.C.*

DEAR MR. QUESADA: Enclosed for your information is a copy of a letter that we have addressed to Mr. D. D. Thomas with regard to Civil Air Regulations Draft Release No. 59–16. The position of the Aircraft Owners & Pilots Association is strongly opposed to the delay proposed in implementation of the raising of the control area floors.

We have corresponded with you previously on this subject and we now wish to bring to your attention the added factor that no explanation has been given by the Federal Aviation Agency with regard to their failure to take timely action on Civil Air Regulations Amendment 60–14, which was adopted by the Civil Aeronautics Board on December 29, 1958.

Representatives of the general aviation industry, meeting with Mr. Thomas on November 2, 1959, considered this problem and made recommendations whereby the Federal Aviation Agency would be enabled to implement 60–14 on the original deadline of January 1, 1960. We have heard many excuses on this subject, but we have not heard one good valid reason for failure to implement this program on schedule. We even note that Mr. James Pyle has been publicly quoted as stating "If we must gamble, we will gamble on the side of safety." There certainly is no gamble involved in a straightforward implementation of this regulation, and we urgently recommend that you personally take action to insure that this Civil Air Regulation amendment is implemented on schedule. General aviation feels very strongly on this subject and we very much hope that there will be no further procrastination on the part of the Federal Aviation Agency. We stand ready to assist you in every possible way in getting this job done.

Cordially,

J. B. HARTRANFT, Jr., *President.*

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AIRCRAFT OWNERS & PILOTS ASSOCIATION,
*Washington, D.C., November 20, 1959.*

Mr. D. D. THOMAS,
*Director, Bureau of Air Traffic Management,*
*Federal Aviation Agency,*
*Washington, D.C.*

DEAR MR. THOMAS: Reference is made to draft release No. 59–16, concerning the definition of control areas and a proposed extension of the effective date of Civil Air Regulations Amendment 60–14 from January 1, 1960, to July 1, 1960.

On September 15, 1959, the Aircraft Owners & Pilots Association forwarded a protest to the Administrator concerning the postponement of 60–14, as set forth in your circular letter of August 27, 1959. This was followed by an additional telephone protest to your office on October 29 when we received

draft release 59–16. On November 2, you convened a meeting of general aviation representatives to discuss the proposed extension of the effective date of 60–14.

In the November 2 meeting, with representatives present from most of the major general aviation organizations in Washington, you outlined a number of actions which were considered necessary by your office prior to implementation of this Civil Air Registrations amendment. No reason was given for failure of the Federal Aviation Agency to take timely action on this regulation. The general aviation representatives present made a number of pertinent observations with regard to the actions deemed necessary by your office, and recommended a manner in which this regulation could be implemented, even at this late date. You again were urged to take expeditious action in implementing this regulation, which has been on the books since December 29, 1958. We understand that implementation of this regulation has been discussed between representatives of the airlines and Federal Aviation Agency employees during the past few months. The meeting of November 2 is the first discussion with general aviation representatives, other than a brief discussion that was initiated by an AOPA staff member immediately after learning of the issuance of the letter of August 27.

We wish to reiterate the recommendations and observations that were made at the November 2 meeting. These are as follows:

1. One of the problems cited by your office is the requirement for a provision of a 500-foot buffer between the floor of the new control area and the minimum en route altitude. It was pointed out that this subject is explored in the discussion section preceding the regulatory matter in 60–14. When a new CAR 60 is printed, the discussion matter will disappear and only the regulation will be be included. Please note that the regulation does not provide for this 500-foot buffer. In view of this, it is our opinion that the 500-foot buffer is not a legal requirement specified in 60–14.

2. In the event that the Federal Aviation Agency deems it desirable to provide the 500-foot buffer mentioned above, this is a separate matter and need not be treated at the same time that the floor of the control areas is raised. It may be pointed out that if this buffer is deemed to be a safety requirement by the Federal Aviation Agency, action should have been initiated many months ago to establish the 500-foot buffer even before raising the control area floors. Since nothing has been done in the intervening months since December 1958, this cannot logically be assumed to be an urgent safety requirement.

3. Another problem area identified by your Office is the determination of terminal control area configurations. As pointed out in the November 2 meeting, immediate implementation of this phase could be accomplished by a very simple designation of a 10-mile radius terminal control area around each airport which now has an approved instrument approach procedure. You mentioned the fact that there are some 2,000 instrument approach procedures established. However, discussion brought forth the fact that many airports have multiple approach procedures and that the number of actual airports involved was considerably less than this number. We cannot understand the "lack of interpretation in your Office on this subject, since the individuals who wrote this regulation for the Civil Aeronautics Board are now employed in the Bureau of Air Traffic Management. They conducted extensive discussions with various individuals in the general aviation field prior to the promulgation of 60–14.

4. A major difficulty cited by your Office in implementation of 60–14 is the fact that present MEA's are established with regard to altitude above the highest obstruction located within a route segment, whereas 60–14 requires the control area floor to be established at a predetermined height above the surface. You indicate that this poses great difficulty because very little information relative to exact terrain elevations is available, whereas you do have complete records of obstruction altitudes. Since you currently establish MEA's for route segments, it is logical that you also will establish the floor of control areas in relation to route segments. This is particularly true since you obviously intend to relate one to the other. Certainly it should not be difficult to determine the highest terrain within a route segment in order to establish the control area floor for that route segment. This determination of elevations does not have to be measured down to the last inch, but need only be determined within reasonable limits. A pilot who is operating beneath the control area floor has only his altimeter and his chart to guide him with regard to his actual height above the ground. He will not have a precise measuring instrument, such as a radar altimeter, but must rely on his own altimeter reading in terms of mean sea level

and compare that with elevations indicated on the aeronautical chart. This certainly does not seem to entail extensive flight checking of 40,000 en route and terminal procedures and 310,000 miles of airways, in addition to 2,000 instrument approach procedures.

5. Realizing the failure of the Federal Aviation Agency to take timely action on this Civil Air Regulations amendment has posed a serious problem with regard to implementation prior to January 1, 1960, it is recommended that immediate action be taken to issue a very simple blanket designation to accomplish at least the actual regulation amendments specified in 60-14. This would include a blanket designation of terminal control areas with a 10-mile radius around every airport wherein an approved instrument approach procedure has been established. It also would include a blanket designation raising the floor of all control areas other than the areas encompassed by terminal control areas to 1,500 feet above the terrain. The third action necessary to implement this amendment would be a companion blanket designation raising all MEA's approximately 800 feet in areas where you have reason to believe that a raising of the MEA is necessary. As an alternative to this third action, an interim procedure could be established whereby the FAA air traffic control facilities would not assign any MEA that appear to be in doubt, but would assign an arbitrarily established new MEA that would be used as an interim figure until such time as the validity of the proper MEA is established. As we indicated in the November 2 meeting, your office still has sufficient time to promulgate these procedures and publish them with an effective date of January 1, 1960. The matter of 30 days notice in the Federal Register is academic, since the original overall regulation—which, in effect, provides the enabling rule—was published in the Federal Register and went through all the rulemaking processes prescribed in the Administrative Procedure Act.

We feel very strongly that the Federal Aviation Agency, having failed to take timely action on this amendment, should now exert every possible effort to meet the original deadline for implementation and find none to be completely valid or to provide sufficient justification for delay in implementation.

The Aircraft Owners and Pilots Association has a current membership of 75,000 members, who operate approximately 50,000 aircraft. On behalf of these members, we urgently recommend that the delay proposed in draft release 59-16 not be granted and that the Federal Aviation Agency take every possible action to see that amendment 60-14 is implemented on the schedule established by the Civil Aeronautics Board in December of 1958.

Cordially,

J. B. HARTRANFT, Jr., *President.*

Mr. KAYNE. There has been some previous discussion before this committee on airport traffic patterns, and specifically those proposed by the FAA for Los Angeles. The proposed patterns, in our opinion, would introduce traffic conflictions and derogate safety.

Further, we informed the FAA that a patchwork approach to this problem by issuing separate rules for every major airport in the country would soon have the industry buried under such a welter of individual rules that no pilot would know whether he was legal or not. We recommend that basic rules should apply uniformly throughout the country and that any special restrictions necessary for jet aircraft should be promulgated as applying only to those aircraft.

Senator MONRONEY. You might cover this later, but your small aircraft, virtually without any noise at all, are required to make different approaches now to certain airports simply because they classified you in the same category as jets, for example.

Mr. KAYNE. That is absolutely correct.

I wish to enter into the record at this point a copy of our letter of December 18, 1959, to the Federal Aviation Agency on this subject. It was directed specifically at the Los Angeles traffic pattern rules, but it contains many comments that are applicable throughout to any traffic pattern rules. Specifically, we cover the point that you so ably detected, and that is that on preferential routing, where you have a

heavily loaded aircraft fly out for several miles before making a turn, a light aircraft that makes relatively a small amount of noise can get off the ground quickly, can turn and get away from the departure path of the heavier aircraft, speed up operations without derogation of safety and without any undue noise penalty on the people on the ground.

Senator MONRONEY. Would you be barred in the proposed rule on the "no eastbound takeoffs" at Los Angeles—I understand this has been held up now, but I am speaking of the proposed rule—between 10 at night and 7 in the morning? Would that apply to all aircraft or to jets only?

Mr. KAYNE. I cannot answer that question precisely, Senator. It is my recollection that applied only to heavier aircraft, but I am not sure of that. I do not have that.

Senator MONRONEY. The point that you are making is that there are many considerations to be taken into account in noise abatement, but the planes you are talking about, the general aviation fleet, would have no bearing on them. You could hardly hear the plane after it had been half a mile off the runway.

Mr. KAYNE. That is correct, sir, and it will speed up traffic in many respects to get the other traffic out of the way quicker so that you can leave the long noise pattern channel open for the heavier aircraft.

Senator MONRONEY. As a matter of fact, it is customary for a general aviation pilot, the minute he takes off, to try to scamper out of the way of the other aircraft and not get hit by a prop blast or by turbulence. So he gets away as fast as he can as soon as traffic rules permit him to break out of the exit from the airport.

Mr. KAYNE. That is correct, sir. This has been described many ways but I think you put it very ably for the purpose of the record.

(The letter referred to follows:)

DECEMBER 18, 1959.

FEDERAL AVIATION AGENCY,
*Docket Section, Washington, D.C.*

GENTLEMEN: The following are the comments of the Aircraft Owners and Pilots Association on Civil Air Regulations Draft Release No. 59–17 "Los Angeles International Airport Traffic Pattern Rules."

The preamble of 59–17 cites the operation of high performance jet transport aircraft as primary justification for the promulgation of the proposed special Civil Air Regulation. The stated requirement for special rules to protect persons and property on the ground relates such operations to schools and other community activities adjacent to the airport. AOPA has no objections to special rules for this purpose, but we strenuously object to establishment of these rules for all aircraft. Commonsense conclusively indicates that a large jet transport loaded with thousands of gallons of fuel can produce more noise and disruption then a light aircraft and is a much greater potential hazard in the event of an accident.

Pilots of airline aircraft, including jets, who use the airport regularly and are limited to operation on certain airports within the airline operating certificate, can easily familiarize themselves with special rules for those airports, whereas the pilot of an itinerant aircraft using a large number of airports will find it well nigh impossible to keep abreast of such special rules. This problem will become more acute if the FAA extends the concept of special civil air regulations to cover traffic patterns at each major airport in the United States.

Paragraph (a)(1) requires permission from air traffic controllers to transit the area below 2,000 feet. This could effectively close this coastal area to en route traffic, which might be required to operate below 2,000 feet because of weather, if the control tower should arbitrarily decide to deny such permission to en route traffic. We are having recurring difficulty with various FAA control towers through their illegal use of the phrase "We are not accepting VFR

traffic" in answer to requests for VFR clearance when the weather is well above local VFR minimums. The FAA has taken no action to clean up this situation and we are reluctant to put additional authority in the hands of the controllers if such abuses are to be tolerated.

The requirement for a written report from the pilot, in each instance wherein a runway other than the preferential runway is used, is not reasonable in the case of general aviation aircraft, which do not constitute a noise problem.

It is noted that special provision is made for helicopter pattern entry at Los Angeles below the altitude of fixed-wing aircraft. This could conflict with the lower altitude pattern at other airports in the area. Further, this is the only specific mention regarding helicopters, which indicates that all other rules, including the preferential runway rule, must be observed by helicopters. This appears to be unreasonable and unneccesary.

The requirement that light aircraft, departing from Los Angeles, follow a preferential routing established for large transport aircraft, is unreasonable and will delay traffic unduly. Light aircraft, which can climb quickly and turn away from the departure paths without creating an undue noise and safety problem, should be permitted to do so in order to permit release of following departures of faster and larger aircraft.

We are informed that the Hawthorne requirement to climb straight ahead to 600 feet will place the aircraft over the downtown area in some cases. A more serious aspect of the Hawthorne pattern is the potential conflict between departing aircraft and those arriving for Los Angeles International when runways 25L and 25R are in use.

The patterns for Hughes Airport have the same conflict for departing aircraft when runways 7R and 7L are in use at Los Angeles International.

Restriction of Santa Monica traffic to a pattern within 1½ miles of the airport may cause serious difficulty during periods of peak training traffic at Santa Monica, since the pattern occasionally must be extended beyond this area to safely accommodate all aircraft.

The conflicts mentioned above, especially those at Hughes and Hawthorne, are due to efforts to channelize traffic into 40° entry patterns which are not necessary at airports with control towers. Maneuvering of aircraft to get into position to enter patterns at the prescribed entry point will unnecessarily extend flight paths, increase the exposure rate and cause conflicts which do not now exist.

As a matter of passing interest, it should be noted that the charts accompanying 59–17 show range courses for the Los Angeles low-freqency facility. These courses were removed some time ago and the facility was converted to a nondirectional broadcast homer.

AOPA has a basic objection to the promulgation of individual civil air regulations for each major airport or terminal area in the country. Such a practice will create confusion, is not required in the interest of safety, and will impose regulations that the average cross-country general aviation pilot cannot reasonably be expected to comply with. If special rules are required for certain types of aircraft, such as jets, then these rules should be established only for those aircraft that are creating the problem. Standard basic rules should suffice for all other operations at this and other airports throughout the country.

Some years ago, the CAB, with the cooperation of the CAA, did a commendable job of simplifying the air traffic rules contained in the Civil Air Regulations. In recent months, there has been an alarming trend to create additional regulations, unnecessarily complicating the operation of aircraft and creating a situation wherein large numbers of pilots (and air traffic controllers) are no longer completely familiar with the rules governing the operation of aircraft. Proposed special Civil Air Regulation No. 436 is in this category. In our opinion, it is unnecessary and will create confusion and derogate safety.

Cordially,

VICTOR J. KAYNE
(For J. B. Hartranft, Jr., President).

Mr. KAYNE. On the subject of rules, we note that the Administrator, in a speech to University of Maryland alumni, stated that the FAA had issued no less than 1,600 instructions to industry and their own people in the month of October. I know that all of these instructions did not apply to pilots but they all applied to aviation. It appears that we should again consider the action taken by the Civil Aero-

nautics Board in 1949, when they made a complete overhaul of the air traffic rules so as to simplify them down to the point where a pilot did not need a lawyer riding as a copilot. Unfortunately, the trend seems to be in the opposite direction today.

No discussion of air traffic control is complete without bringing in the airport, which is the starting place of all traffic, and which can be a thorn in the side of good traffic management. We realize that the subject of airports more properly comes under the Federal Airport Act, but its relation to air traffic control makes some discussion appropriate at this point. As has been said before, general aviation uses all of the airports used by the airlines and many thousands more. The conduct of everyday business requires general aviation to use the major airports along with the carriers, but this often creates problems with regard to turbulence. The turbulent wake of a Super Connie or a DC–7 can flip a single engine business plane onto its back under some conditions. This makes for extra caution on the part of all concerned. The answer to this may be in short parallel runways at major airports for aircraft that do not need 10,000 feet of concrete. This would speed up operations and enhance safety, with a minimum of cost.

The smaller airports around the country have been disappearing at an alarming rate. We believe that added emphasis should be placed on the provision of the smaller general aviation type airports in the Federal airport plan. This may have the result of dispersing some concentrations of traffic and easing the load on some of the larger facilities.

To give you a rough idea of what I mean, we could have about 300 first-class general aviation airports throughout the country just for the price of Dulles International Airport. I am not recommending that we do away with Dulles International.

Senator MONRONEY. This is a very important thing which the committee touched on in the Airport Act hearings, that certainly we are not going to pass any rules prohibiting the general aircraft from using our major airports, but as a matter of custom, if there is a good general aviation airport bordering a town outside of the flight pattern, by their own choice a great many general aviation pilots will use this in preference to getting into a crowded traffic pattern.

Mr. KAYNE. That is correct. Meigs Field in Chicago is a very good example of that.

Senator MONRONEY. Many cities have them, some are private installations, some are city maintained, and some are cooperative in a sort of air country club nature. The point I am trying to make is that whatever traffic is relieved through the construction of these small and inexpensive airports, then you have literally enlarged the airspace and made it at least more comfortable for the high performance aircraft that must use and can use only 10,000-foot runways or runways of great length.

Mr. KAYNE. In many cases you might say that enlarges and receives the load on the larger airports and thereby enables them to take on a greater capacity.

Senator MONRONEY. It relieves the air traffic control tower operators of some of their landings and takeoffs as well, does it not?

Mr. KAYNE. That is correct, sir. Of course we still have to keep in mind that the figures do show that at the major airports where the

FAA operates towers, over 50 percent of the traffic today is general aviation traffic. We also feel that some emphasis on smaller airports will help considerably.

Another area that has received much attention throughout the aviation industry and Government for many years is the field of radio communication requirements. As you are aware, the Congress has appropriated vastly increased sums in the past several years for the purchase of radio communications equipment for the air traffic control facilities of the Federal airway system. We are wholly in accord with the provision of adequate communications channels for air traffic control, but we have been hard pressed to maintain normal operations in the face of the deployment and use of this vast array by the Federal Aviation Agency. I am sure that Senator Engle, who I understand is under the weather today, in his active flying, has become aware of this situation wherein the Federal Aviation Agency has been installing additional radio channels on the ground faster than the average pilot can keep up with them.

Several years ago, in an effort to help alleviate the problem as it then existed, AOPA developed two basic radio frequency plans, one for VFR flying and one for IFR flying. These plans recommended a minimum of 9 channels for VFR and 25 for IFR flying. As the immediate result, several manufacturers started selling their sets with these frequencies installed, whereas prior to that time the purchaser did the best he could to outguess the frequency problem. These plans were accompanied by a cooperative effort on the part of the old CAA to keep certain of the control frequencies within these plans. Meanwhile, through our publications, we urged our members to buy more and more multichannel communications equipment.

Again, Mr. Chairman, to help the committee, I have passed forward to the committee table a number of copies of one of our pilot service bulletins on this subject. We issue these bulletins on a variety of subjects. This particular issue had a distribution, as I recall, of approximately 200,000 copies throughout the United States and even outside of the United States.

Even so, the aircraft owner who spends $1,000 on a radio—and this is average or below—soon finds that he is no match for the FAA facilities in the New York area. These facilities currently have installed and use in their handling of civil aircraft about 80 VHF communications channels. This does not include the UHF channels used for handling military aircraft.

While the installation of this multitude of radio communications channels with Federal money poses no problem to the Federal Aviation Agency, it eventually leads some controllers—and others—to expect every aircraft to be equipped with all these channels. Proposals have been made—none successfully to date—that aircraft flying into certain areas where the FAA controls traffic should match the Federal Government on a frequency-by-frequency basis. To understand the impact of such reasoning, we will have to take a look at the radio equipment in our average general aviation airplane.

While the great majority of our aircraft do have two-way radio in the very high frequency band, these sets are ones that have been developed over the past few years and generally reflect the number of channels deemed to be adequate for the flying operations of the

purchaser. These average from 8 to 27 channels, with many aircraft having more or less. Many have multichannel equipment extending up to a number such as 90, 180, or even 360 channels. The average citizen who owns and flies an airplane has not had the requirement to install such equipment. I am speaking there of the equipment in the order of 90, 180, or 360 channels.

Another factor pertinent to this explanation is the matter of electrical power available within the airplane. Most airplanes have generators of limited capacity, just as you do in your automobile. There is a limit to the amount of electrical equipment that can be carried on board and operated from the electrical power available. You can install a larger generator in your automobile without great penalty, but you cannot do this in most airplanes because of weight and size limitations or limitations on the drive mechanism from the engine.

On today's market, the approximately 8,000 aircraft manufactured by the general aviation industry in 1959 sold at an average unit price of approximately $20,000. In order to equip one of these airplanes with radio communications and navigation gear suitable for full cross-country instrument flying and communication on all channels now implemented by the Federal Aviation Agency, the prospective purchaser must spend somewhere in the neighborhood of $5,000 to $8,000 additional for radio equipment. To view this problem another way, you can purchase a reasonably good used aircraft today in the single-engine four-passenger category for from $5,000 to $10,000. Usually, this aircraft is equipped with the popular type of radio equipment that contains 12 or possible 27 channels. To bring this aircraft up to a full communications capability, to cope with everything in the New York area, will require the owner to spend an additional 25 to 50 percent of the original purchase price of the aircraft for more radio equipment. We have heard many pilots say that they will sell their aircraft and quit flying before they will be forced into such a program. We would have little sympathy for them if there was factual justification for this talk of requiring such a multitude of radio equipment in an aircraft, but we must agree with these owners that they have no requirements for such equipment and that they can operate safely into these areas with much simpler and less expensive equipment.

We are beginning to get the feeling that our support of the program to obtain and furnish adequate radio equipment for the Federal airways facilities is beginning to backfire because of the recommendations being generated to require everyone to come up to the standards of facilities provided with an abundance of this equipment out of the Public Treasury. This may be compared to providing a commissioner of public roads with a Cadillac purchased out of public funds and then finding that the commissioner wants to pass a rule requiring every citizen to have a Cadillac if they share the same highways.

Under the present administration of the Federal Aviation Act, the Administrator can pass such a rule and we have no avenue of relief without extraordinary measures. This is another illustration of the necessity for a system of checks and balances whereby another agency has the authority to review and amend the actions of the Administrator.

Senator MONRONEY. You say that the average type of general aviation aircraft would contain 12 to 27 channels at the most. These other

channels that you speak of, going up to 80 or 90, what would those additional channels be used for? I know that they wouldn't be used for military purposes because the military doesn't want general aviation or even commercial aviation going into the military airports unless it is a joint-use airport. Is that part of the ground control switchover? Is that one of the things that requires these additional channels?

Mr. KAYNE. Ground control, Mr. Chairman, has two basic channels which are used in the fundamental passage of 25 that we referred to. They are now talking of implementing one or two additional. But the bulk of these additional channels that we referred to come in services such as approach control, departure control, the various types of radar control, the direct center communications, peripheral communications to centers, and so forth.

The FAA has made, I think, a very good effort to hold at least the basic local control frequency of most of the towers to a plan that can be accommodated within the average aircraft radio. But this has been a matter of having to watch the store, you might say, every minute because it keeps slipping out of line, so to speak, and needs much realinement. I think Senator Engle earlier talked of the situation he ran into in San Francisco. This is one which somehow just slipped out of line until it was reported and we got it back in through cooperative efforts of the FAA.

Senator MONRONEY. I know that the busier an airport gets, those that used to keep you on the same frequency after bringing you in and after you land, now will turn you over to ground control. This is necessary isn't it, to relieve the airspace, the radio spectrum, to accommodate the extra heavy load that these airports have undergone?

Mr. KAYNE. This is quite true, sir. The real difficulty comes not on this ground portion but on the air portion where, on a bright sunny day, if you are flying into Washington, for example, and you call on a frequency that is advertised on the aeronautical chart which you are using to navigate with, you may receive anywhere from two to four frequency changes before you ever get your airplane to the hangar, and probably two or three in the air. You are shuffled from one controller to another, and one frequency to another, all while you are trying to fly, navigate, watch for traffic, and you are continually shifting frequencies.

Senator MONRONEY. This is not an arbitrary decision to confound general aviation. This is a result of overcrowded airspace and the need for communications. I know even on many airports in Oklahoma, which are not too overcrowded, sometimes you have to wait 2 minutes to get to the control tower because of the amount of information and use of that service by other aircraft in the area.

Mr. KAYNE. It is not an arbitrary decision to change frequency, but these are procedures worked out in many cases by the controllers themselves in an honest effort to split the workload.

Senator MONRONEY. This is what we are concerned with.

This thing keeps mushrooming, and you can get so many conversations on one radio channel. One control tower only has one pair of hands and one pair of eyes. If you are going to have an overload of

the traffic in the area then you have to pass it along to another controller, to another communication channel.

Mr. KAYNE. In this particular case there is some question of whether you have to do this to the extent that they are doing it. In other words, the control tower does have a number of individuals; each one has his own frequency. In fact sometimes several frequencies. And the pilot who is coming into the area quite frequently then must match frequency for frequency with these people on those specialized functions. This is more or less a synthetic determination or splitting of the functions within a facility and it is done honestly in an effort to divide the workload, you might say, between the boys on duty. What we are pointing out is that you can operate and we do operate, every day, without this multitude of frequencies. They are really not necessary in the interests of safety. It is more or less a convenience, you might say, in many respects, a convenience to the administration of the facility itself.

Senator MONRONEY. The testimony we heard from Mr. Thomas yesterday about reaching out for ways of putting out the routine information, will do much to help the pilot, and maintain the much used channels for the information the pilot must have for his actual air traffic control.

Mr. KAYNE. I think Mr. Thomas at that point, Mr. Chairman, was referring to certain automatic broadcasts of information which is performed by another type of facility, the air traffic communications station, and they do find, I believe, that by continuous broadcast of certain information they prevent, you might say, a flow of individual requests for this information. The pilot can just tune in and he gets the information and therefore does not have to initiate a separate request for it. But in the control towers—and they have tried some splitting off of function there—where initially they ask you to contact the approach controller, he will give you the routine information so you won't bother the controller who is trying to control traffic in the immediate vicinity of the field. This is fine in some respects but it has been found in many areas that this is causing a lot of communications time. It is not relieving the local controller particularly because it is putting the pilot through all kinds of gymnastics up there in tuning back and forth from one controller to another. Quite frequently when they are standing right beside each other and shoulder to shoulder, and when their frequencies frequently are not so busy that they have to do this. We are for everything to help the controller, but we would like a little help on the other end of the horn, too.

I might add, before dragging this out unduly, that at the present time the FAA is working on a new plan for the assignment of frequencies. While there was some little discussion more or less between industry and the Government on this plan as initially it was getting underway, within the past week, in fact since these hearings started, the FAA has called a meeting with industry and have explained their plan and asked for comments. I think this is a step forward and one which will possibly alleviate much of this situation. In other words, it is a better organization and use of these frequencies.

To continue: This committee has heard testimony to the effect that in the decade of 1949 through 1958, a total of 10,686 general aviation aircraft were destroyed and an additional 28,312 suffered substantial

damage as a result of accidents of all types. Why general aviation's record in this respect was singled out during a discussion of military operations, we do not know. However, it would be of interest to know how many military aircraft, in noncombat operations, and air carrier airplanes were destroyed or suffered substantial damage during the same period. The figures given this committee correspond to the totals found in the FAA Statistical Handbook of Aviation for 1959.

It was further stated before this committee that, during the decade of 1949 through 1958, there were 100 midair collisions between general aviation aircraft, 21 collisions between general aviation aircraft and military airplanes, and 12 collisions between general aviation aircraft and air carrier airplanes. The witness did not specify, but it is assumed that the latter two categories, as well as the first, referred to collisions occurring while both were airborne. Using the total of 33 midair collisions between general aviation aircraft and the other two categories of aircraft, the witness said the elimination of both military and air carrier flying completely during the decade would have decreased the number of general aircraft destroyed or damaged by accident from 38,998 to 38,965, or less than one-tenth of 1 percent. These statements are entirely misleading and I shall explain why.

First, let's dissect the 38,998 figure given as the number of general aviation aircraft destroyed or substantially damaged during the decade under consideration. We will have to take FAA's word that 10,686 were destroyed in accidents. But let's examine closely the 28,312 general aviation aircraft "substantially damaged" in accidents. Present reporting rules require that accidents where the aircraft incurs damages totaling $100 or more shall be reported. In the absence of any information to the contrary, it can be assumed that reportable accidents find their way into FAA statistics. Another table in the same statistical handbook bear up this assumption. On page 129, in a table labeled "Vital Statistics and Results of Accidents—1947–58", we find that, of the given 38,632 accidents, a total of 32,288 resulted in minor or no injury to occupants, during the 1949–58 period.

Obviously, the substantially damaged aircraft include what to the automobile world would be dented fenders, broken headlights and radiators. Translated into aviation terms, you have bent propellers, dented wings (from taxiing accidents) dented metal fuselages and the like. It doesn't take much to run up a $100 repair bill—a ground loop or a brush between two planes on the ramp could cost more than that.

In his testimony of January 25, Mr. Thomas discussed at some length the problem of midair collisions—although, for some reason, he confined his comments to those involving general aviation aircraft. He pointed out that there were 37 such collisions in 1958 and 1959, but he did not point out that the number of such collisions, for the number of general aviation aircraft flying at any given time, is extremely low. For example, general aviation aircraft outnumber those of the scheduled airlines more than 50 to 1. Logically, generally aviation—if for no other reason than its size—should be involved in more of just about anything: more airport use, more airspace use, more communications use, and more accidents.

Then, in listing six "fundamental similarities," he referred to two which puzzle us. In one, he said: "Either one or both of the aircraft were on no flight plan, or on a VFR flight plan." The inclusion of

this statement can only infer that the FAA seems to regard this as a "lack" of some kind. Flight plans are not needed to avoid collisions in good weather. And a VFR flight plan is used by pilots solely for the purpose of assuring search and rescue in the event he fails to arrive on schedule. Pilots flying in this kind of weather—all pilots—are obliged under the law to maintain a proper watch, to look where they're going.

The second "similarity" Mr. Thomas cited was that "either one or both of the aircraft did not establish communications with the control tower even if a tower was available." Again, this language implies some negligence and, for this reason, appears misleading. There is no need to contact a control tower except for landing or takeoff—assuming, of course, that all pilots in the airspace at the time are abiding by the regulations.

A further word on the general aviation accident figures quoted by Mr. Thomas—under the heading "Military Operations," for some reason. He states gross totals—again, as I've already pointed out, ignoring those statistics which would put his figures in their proper perspective. In 1959, for example, there were 103,376 registered civil aircraft, of which 96.2 percent, or 99,469 aircraft, were general aviation. That's just the current figure as of May of 1959. These figures are taken from the FAA registration records. The gross totals over the 1949–58 decade Mr. Thomas cited were very substantial, involving many hundreds of thousands of aircraft flying many millions of hours each year. Yet, for some reason that escapes us, only these misleading figures were presented.

And once again, we find ourselves pleading with the FAA for increased safety. Mr. Thomas points out that the FAA cannot ban "routine military operations" from joint-use airspace, prohibiting certain military aircraft from using civil airports, and so on. He describes these as discrimintory measures that "would do a disservice to the defense of our country."

Again, I want to make AOPA's position clear. If a certain type of flying clearly and obviously presents an unwarranted hazard to other aircraft in the same airspace, it's unsafe. It's unsafe no matter how well intentioned the purpose. If that B–58, tearing across the countryside at an average speed of 700 m.p.h., had rammed headlong into a DC–6 approaching for a landing, or climbing out after takeoff, no amount of "national defense" argument would have saved the lives of the people involved, nor quieted the public uproar. AOPA does not question the necessity for the military to conduct many hazardous, yet essential, flight operations. Nor do we question the necessity for testing guided missiles, new armaments, or atomic weapons. All we're asking is that extrahazardous aircraft flights of this kind be rigidly confined to testing areas, in exactly the same manner as the guided missile is confined to special test ranges, new armaments are tested only at places like the Aberdeen Proving Ground, and atomic weapons are tested under the most rigid precautions. None of these devices is permitted to be tested in areas used by the general public. Apparently the FAA has somehow established a novel standard of safety which changes in accordance with the importance of the hazard to the national defense.

In his comments about formation flights of jet fighters, Mr. Thomas described in detail how and why such operations are safer than those

of nonformation operations. If this is true, we'd be most interested in hearing someone in FAA rationalize the fact that, in the three collision accidents cited in our previous testimony, six airplanes were destroyed and four people killed—all while conducting precisely this type of formation flight.

Similar confusion was added by the testimony having to do with the Air Force's low-level operations under the code name Pop Up. Mr. Thomas indicated that pilots probably were alarmed at the name Pop Up because "* * * the name suggested an abrupt pullup over the bombsite, which was not the case at all." So far as we know, pilots with whom we had contact were not alarmed at the name of the operation—but they were alarmed by the fact that these bombing runs were completed with sharp pullups, usually from within a few feet of the ground to altitudes as high as 20,000 feet. This is a recently published description of how Pop Up works:

> * * * The altitude of 500 to 2,000 feet above ground is maintained along a route that ranges and winds for several hundred miles. * * * Maximum speed of the jets is about 320 m.p.h. * * * Some 50 miles from the target city the aircraft begins to climb at about 2,500 f.p.m. * * * In the past, Pop Up aircraft have leveled off anywhere between 15,000 to 20,000 feet. They remain at this altitude and over the target perhaps 90 seconds. * * * The aircraft then descends 5,000 feet, flies a flight plan, and is off. * * *

The Air Force itself, in its official description of Pop Up operations, says these jets will operate at or above 500 feet above the ground, then "* * * will climb to an altitude not to exceed 20,000 feet."

Also, the FAA itself has been issuing warning notices to airmen throughout the country, wherever nearby PopUp operations are scheduled. AOPA staff members, flying around the country, have heard these warnings broadcast over FAA communications and radio range facilities a number of times. One of our staff members, flying over New Mexico not long ago, heard such a warning on a radio range station, then shortly afterward saw two B–47 jet bombers zoom up from the bed of a dry lake, climbing at high speed and a steep angle up through broken clouds to high altitude—across the airway on which our staff member was flying.

So it is that, once again, we find ourselves arguing with the FAA in an effort to increase safety. AOPA contends such flying is hazardous in joint-use airspace, and the FAA says such flights are "in the interest of national defense" and hence, apparently, safer than would be comparable flights not made in the interest of national defense. Once again, we find ourselves puzzling over the factual record.

On June 10, 1959, we wrote Mr. Quesada of our concern about the hazards of Pop Up, after having surveyed pilots and airport operators throughout the country, along the announced Pop Up routes. The following is quoted from that letter:

> * * * In the course of our survey of this subject, we have received numerous reports from pilots and airport operators in various parts of the country saying that high-speed jet bombers fly through airport traffic patterns below altitudes regarded as even safe for light planes. One pilot reported to us that he pulled up sharply during a landing approach and nearly stalled his airplane to avoid a jet bomber that flew under him at 900 feet.
>
> AOPA's information gives us no indication that the FAA has shown any active interest in such obvious hazards. There appears to be little doubt that similar flight activities conducted by civil aircraft would constitute careless and reckless flying under the definition in the Civil Air Regulations * * *. AOPA sincerely hopes no major accident results from this operation. It is for this reason

that we wish to ask your personal investigation of the hazards involved, and request you take whatever steps appear to be necessary to protect all other aircraft in the airspace.

We were particularly interested in the five possible courses of action cited by Mr. Thomas. He is to be particularly commended for arriving at the conclusion that a speed limit appears to be one important requirement for low-altitude flights. This is a recommendation AOPA has been making for years. We believe this step should be taken immediately by FAA.

The FAA testimony on the subject of air traffic control touched on the recommendation made earlier by AOPA that "fighter break" approaches to joint-use airports be discontinued in the interest of safety. Our testimony before this committee was given on January 15 and was based in part on a collision between a jet fighter and one of our members near Mansfield, Ohio, on November 3, 1959. Preliminary reports indicated that our member was hit by one of a formation of jet aircraft that were making an overhead fighter approach to the airport. The accident occurred about 4 miles from the airport. On January 19, 4 days after our testimony, AOPA received in the mail from the FAA, a new policy concerning this type of approach. Their new policy was dated November 30, 1959, less than 30 days after the Mansfield collision, and specified that such approaches should roll out on final approach not less than one-quarter mile from the approach end of the airport. This conceivably might prevent another Mansfield type accident if provision had been made for formation flights, or flights in trail—follow the leader—where additional spacing from the end or the runway might be required because of the number of aircraft in the flight. No such provision was included. Again, this is an example of issuance of procedures by the FAA without obtaining the benefit of full discussion with industry. Notwithstanding the shortcomings of this procedure, it is quite likely that our statement before this committee would not have raised this issue if information on the issuance of the new policy had been made available to industry on a more timely basis.

In summary, AOPA recommends—

(1) That the air traffic control system be expanded commensurate with traffic requirements and as required in the interest of safety;

(2) That minimum performance standards for general aviation equipment, when shown to be necessary in the interests of safety, be engineered specifically for general aviation equipment and requirements;

(3) That employees in the air traffic control service receive compensation and other benefits commensurate with their duties and responsibilities;

(4) That additional precision approach radars be installed;

(5) That VHF direction finding equipment be installed in FAA facilities;

(6) That VFR radar advisory service be extended;

(7) That more emphasis be placed on general aviation requirements for airports and airport facilities;

(8) That basic traffic pattern rules should apply throughout the country in preference to individual rules;

(9) That the Civil Air Regulations be condensed and simplified;

(10) That a simplified frequency plan be developed and adhered to by the Federal Aviation Agency. Such a plan now is under development.

In closing, Mr. Chairman, we believe that the individual controllers of the Federal Aviation Agency are doing an excellent job and will continue to do so provided that they are given the proper encouragement and consideration. We, and others in industry have helped the Government in past years to develop the air traffic control system and we will continue to offer constructive assistance in the future, whenever we are permitted to do so. In this field, like many others under the present administration of the Federal Aviation Agency, we have asked the Agency to consult with industry and obtain the best knowledge available prior to taking decisive action on matters that will affect the flying public. Our success has not been too good and we oftentimes find ourselves fighting a defensive battle against some new proposal of the Agency merely because it appears that they have not obtained full information on all facets of the problem prior to acting. We sincerely hope that the action of this committee in reviewing the administration of the Federal Aviation Act will clarify the intent of the Congress and thereby improve relations between FAA and the industry which it is supposed to promote, encourage, and develop.

I wish to apologize, Mr. Chairman, for the speed with which I went through this, but I understand that you are pressed for time and I tried to shorten it up.

I wish to take this opportunity to again thank the committee on behalf of our members for the invitation and the opportunity of appearing here today.

Senator MONRONEY. Thank you very much for your statement and for the suggestions that it contains.

Regarding the last part of your testimony, what you would like, I gather, is free consultation before the fact, rather than comments after the fact on the issuance of flight rules and safety regulations.

Mr. KAYNE. That is correct, sir. And to give a little illustration of that, there were several chuckles in the committee room this morning when Mr. McDermott was talking of the possible placement, you might say, of burned out, worn out, or tired out controllers. There are a number of us in this room, I guess, who fit that category, and quite a few excontrollers sitting back in their chairs. In these people, and in their work for the various organizations and groups around the country, manufacturers, associations such as ours, there is a vast fund of experience, background, and aviation knowledge. All we ask is that the FAA take advantage of this and tap it as necessary.

Senator MONRONEY. Any formalized opportunity to secure this through open hearings or formal consultations with various branches of the industry would be welcomed before the rule is a fact, or before it is even published to become effective on a certain date. Is that not one of the main complaints that the branches of the aviation industry have?

Mr. HARTRANFT. It is.

Senator MONRONEY. You feel that you have to chip this out of solid concrete instead of shaping it while it is still wet.

Mr. HARTRANFT. I wish I had your capacity for words. This is exactly correct.

Senator MONRONEY. This seems to me to be the burden of much of the complaint.

Getting back to the practical situation which I know you are concerned with, and you are looking far enough ahead, probably a great deal farther than I am, the time will be with us, and within another 2 or 3 years, where almost your entire commercial fleet will be either pure jets or turboprop jets, with speeds going up to above 400 miles an hour. As one who uses the airspace more often probably in private or general aviation aircraft than airlines, I would like to see a separation of its traffic. I believe that would correspond generally to your feeling; would it not?

Mr. KAYNE. One thing we did not bring out in this testimony, we have discussed informally with the Federal Aviation Agency and the CAA, before it, over the past several years just this problem.

There are a number of ways that you can segregate this traffic or protect it, if you will. These were explored by many groups prior to the FAA. There are any number of recommendations that have been made and documented concerning corridors, funnels, cones, every type of airspace that you can think of. We can see an extension of some of our present-day operations because we have had jets with us for many years now in the system—the fighters particularly of the military services—wherein to get those airplanes from the ground and up to an altitude that is operationally desirable for the type of engines that they use, they need more or less of a clear protected path. This is more or less the foundations of our restricted area climb corridors.

Another way to do this through the same type of corridor operation is one that also provides radar surveillance. Actually, in fact, it has it today primarily in a lot of the restricted area climb corridors. So you can make sure that the path of this aircraft going up or coming down from the deck is clear.

You also then by division of airspace somewhere provide protection of aircraft there. This is positive route control segments from 7,000 to 22,000 and more or less a cooperative effort between the airlines and military at the higher altitudes in the jet routes. All of this we are completely in accord with.

We can see extension of this to where it will provide ingress and egress to airports for the high-performance aircraft. It will permit them to get to the altitudes they desire for the best optimum operation of their equipment, and yet it will not significantly penalize other operations of aircraft which want to operate at the lower altitudes. This ultimately will require, we are sure, some division of the airspace so that the high-speed equipment will get up there and operate above those altitudes.

What it is today, we don't know. FAA, in fact CAA, announced that eventually they would control all airspace, or all operations—in other words, a positive control type operation—above 24,000. This they have not yet been able to do.

Their next step was to lower the continental control area floor to 15,000, and I guess the final phase is to lower all operations below 15,000 on a positive control basis. This they have not yet been able

to do. This imposes a terrific burden on our system in terms of manpower and everything else.

In all of these stages down to that point I think you would find the Aircraft Owners and Pilots Association helping to the utmost.

Mr. HARTRANFT. Mr. Chairman, I would like to add a word to that. I believe there are some natural things that come in here.

We are orbiting, all of us, to a pretty common goal. The figure of 15,000 feet which was mentioned by Mr. Kayne is really the altitude above which you must operate in pressure equipment. Pressure type equipment then means heavier types of equipment more fully implemented, and more fully implemented airplanes. So that I think all of us in the industry are thinking in terms now of something of the order of 15,000 as the dividing point between operatiosn above 15,000 which require a full positive control, and operations below which do not. I don't think there is really too much division between Government and industry or within industry. We are juggling figures a little bit. By and large, we are getting into a stratification by function.

Senator MONRONEY. You haven't reached the point at which that breaks off. But the conclusion that you have reached is that there must be some stratification to take care of the high-performance aircraft.

Mr. HARTRANFT. I believe that the problem is that even if we took all traffic today above 15,000 and put it on positive control, there is some question as to whether the system could accommodate it. This is the limiting factor at the moment.

Mr. KAYNE. Mr. Chairman, as I outlined, the system today has not been able to do this above 24,000. Actually, we are talking two or three or four steps ahead of where we are today. But we do have to look ahead, we appreciate that.

Senator MONRONEY. It is coming pretty fast.

Mr. KAYNE. Right.

So this situation, as things develop one step after the other, I think we will be all right along helping it develop.

Senator MONRONEY. Speaking for general aviation, the theory that there is to be airspace on top at which positive control may be necessary when systems are available, you have no objection to that. You do want positive control extended down to the deck where you do not wish to squeeze it down within an unoperative altitude that would not give enough flexibility for choice of weather conditions and things of that kind.

Mr. HARTRANFT. I think it is only fair to say, too, Mr. Chairman, that we expect to be flying at some of those altitudes in general aviation aircraft because we are ourselves coming into the jet aircraft end of it. But this commingling at those altitudes the equipment is going to be such that it is going to require flying through weather, usually, to get there. It is going to require the pilot to be qualified to do that. I think the problem will work itself out rather naturally. As the Government is able to implement the mechanics of it, I think that we will more or less mold into this pattern. I really don't see this as a difficult problem of solution.

Senator MONRONEY. At this time you do not have anything you wish to say about airspace management, do you?

Mr. HARTRANFT. No, sir. That is a subject which we were not able to combine with this testimony. We do request to be heard on that.

Mr. KAYNE. It will be relatively short, Mr. Chairman. Not as long as this one.

Senator MONRONEY. Thank you very much for your helpful information.

The next witness will be Mr. William B. Becker, director of operations and engineering of the Air Transport Association of America.

Mr. Becker, we are happy to have you here. We appreciate your giving us the benefit of your testimony. I am sorry Mr. Tipton couldn't accompany you.

## STATEMENT OF WILLIAM B. BECKER, DIRECTOR OF OPERATIONS AND ENGINEERING OF THE AIR TRANSPORT ASSOCIATION OF AMERICA; ACCOMPANIED BY WALTER JENSEN, DIRECTOR OF OPERATIONS, AIR NAVIGATION AND TRAFFIC CONTROL, AND STANLEY SELTZER, ASSOCIATE ASSISTANT DIRECTOR OF AIR NAVIGATION TRAFFIC CONTROL OF THE AIR TRANSPORT ASSOCIATION

Mr. BECKER. Thank you, Mr. Chairman. He had intended to, but another meeting has necessitated his appearance.

My name is William B. Becker. I am director of operations and engineering of the Air Transport Association of America, which is composed of substantially all of the U.S.-flag certificated airlines.

On my left is Walter Jensen, director of operations, air navigation and traffic control. On my right, Stanley Seltzer, who is the associate assistant director of air navigation and traffic control of the Air Transport Association.

In the event after the testimony here there are any questions, they will be helpful in answering some of your questions.

The airline industry deeply appreciates the opportunity to discuss with the committee the important subject of air traffic control. Our interest in this subject is clearly pointed up by the fact that we have appeared before the committee on numerous occasions to discuss it.

The problems in the field of air traffic control—or air traffic management as it has more recently been called—which faced the newly created Federal Aviation Agency were tremendous. This situation was due to a number of factors: the great and continuing increase in air traffic, both civil and military; the use of faster aircraft along with the continued use of slower aircraft; the fluctuating amounts—most often the insufficient amounts—of Federal funds available for development of an up-to-date air traffic control system; and diffusion among various Federal agencies and committees of authority and responsibility for management of the common airspace.

As the president of our association pointed out to the committee on January 14 of this year, the FAA moved up on these problems quickly, aggressively, and effectively. It has to its credit solid achievements in the field of air navigation and traffic control, airspace management, and research and development. Mr. Tipton summarized the FAA achievements in these fields in his testimony to the committee; consequently, we will not repeat the impressive list set forth in that testimony. As the committee knows, the FAA's record is very good.

While we are deeply appreciative of the solid achievements of the FAA in the field of air traffic control, we must, in all candor, point out that much remains to be done. Airline, as well as other civil and military flights, are still being delayed due to air traffic control deficiencies. Remedies must be applied as quickly as possible because the air traffic control problem is not a static one. We have to walk fast to keep up; to make progress, we have to move forward to the limit of our abilities.

We believe we can be most helpful to the committee today by summarizing the principal problems in the field of air traffic control and our suggestions for coping with them.

1. The need for close coordination among the bureaus and offices of FAA, and between FAA and users of the air traffic control system.

The Congress created the FAA so that there would be an independent civil-military organization with authority over the airspace, to provide a common system of air traffic control, common navigation aids, and the research and development needed to move efficiently and safely the increasing amounts of air traffic over that system. Necessarily, the FAA is a large organization. In any large organization, intra-agency coordination is difficult, and frequently becomes more difficult as organizational lines harden. We believe that continued vigilance is required to assure free interchange of talent and ideas between the separate bureaus of the FAA, if maximum benefit is to be gained from the diversified knowledge represented by these bureaus. It is absolutely necessary in a field as complicated and technical as air traffic control, that the office which is in charge of the management of traffic on the airways keep in the closest touch with the office in charge of research and development of facilities to be used in that management. Similarly, that the office in charge of the procurement, installation and operation of airway facilities, work closely with the research team and the air traffic management team. This needed interchange of talent and ideas will not take place automatically. Consistent and directed effort is necessary not only to keep the lines of communication open, but to insure that the information and know-how of one office is used by others in the Agency.

We have seen some early signs, not yet of major significance, indicating that there is a potential problem of lack of intra-agency communication. This potential problem merits the most careful scrutiny by the FAA.

Of equal importance, we believe, is the free and open interchange of information between the FAA and the users of the ATC service. We believe that the military agencies, as well as the civil users—general aviation, business aviation, and air transport—can become more intelligent users of the ATC service, and contribute to its efficient functioning if communication lines are kept open and freely used. This also warrants continued attention by the FAA.

2. The need for better coordination between military and civil aviation with respect to special military flight activities.

The FAA, as the agency solely responsible for management of airspace, has the responsibility of coordinating military use of the airways system and special military flight activities which affect the handling of traffic on that system, with other users. If this responsibility is to be properly discharged, it is incumbent on the

Military Establishment to give the FAA as much advance notice as possible of any military exercises which will have an effect on air traffic. Although these exercises usually result in impairing the efficiency of airline operations, we recognize that certain operations of this type are necessary in the interest of national defense. However, the adverse effect can be minimized if the FAA has sufficient advance notice of the exercises and, in turn, notifies the civil users of the airways, to the end that proper coordination can be secured well in advance of the scheduled commencement of a military operation. In most instances to date, information on such operations has been "too little and too late."

To cite just one example, the airlines were recently briefed by the FAA and the military just before the start on November 24, 1959, of a military training activity identified as Operation Oil Burner, which involved low-level training flights of B–47's and B–52's in the vicinity of, across and on certain airways. The leadtime was so short that there was not adequate opportunity for civil aviation and the FAA to work out all of the en route and terminal problems created by the exercise until after it had begun. In order to preserve the safety of airline operations, scheduled flights had to be temporarily suspended in one city, and delays and circuitous routings resulted, to the inconvenience of the traveling public. As a matter of fact, Operation Oil Burner is still disrupting airline service.

It is clear in this case, as it is in many others, that in order to make sure that safety is not impaired, air service is either canceled or delayed, to the detriment of the public.

With proper planning, the present situation could be avoided. This is an area where coordination between the Government and the civil users must be improved.

In the situation cited, the FAA personnel charged with responsibility for this program did their best to meet the requirements placed on them by the military. However, it was clear that the time between the planning of the exercise and the scheduled beginning date was so limited that proper consideration could not be given to the coordination of the exercise.

We believe that in the interest of safety and operational efficiency, there must be enough time for coordination of such special military exercises, and that this coordination must be vigorously carried out. We believe that the airlines, by participating in this coordination at the earliest possible time, could and would contribute substantially to the smooth integration of special military operations into the already complex operational structure.

3. The need for placing more airspace under positive control.

The airlines have fostered and endorsed the principle that all airline aircraft should be provided positive separation. In basic terms "positive separation" means that pilots will not be forced to rely on the principle of see and be seen to avoid other aircraft. The need for positive control is evident. The increasing density of air traffic and the ever-increasing speeds of aircraft, with resultant high closure rates, make it increasingly difficult for pilots to see and avoid other aircraft on potential collision courses.

In 1956, the airlines, through voluntary action, developed a program calling for the gradual transition of airline operations to instrument

flight rules (IFR) in all cases. This program was implemented in February 1957 when all airline aircraft operating at or above 18,000 feet mean sea level (MSL) were placed under IFR. In May of 1958, the airlines agreed to lower the previously established floor of 18,000 feet MSL to 10,000 feet, and on July 1, 1959, the program was further advanced by voluntary elimination of visual flight rule climbs and descents at or above 10,000 feet MSL. This program, although not positive control, permits the air traffic controller to provide separation for a greater percentage of the aircraft in the air traffic control system. It also gives the FAA experience which will be helpful in attaining full implementation of positive control procedures for all airline aircraft.

An official step toward positive control was taken by the CAB in May 1958, when it adopted a special civil air regulation authorizing positive control procedures on specific airways as designated by the CAA. These procedures were implemented in June of that year and at present include only the airspace between 17,000 and 22,000 feet MSL, inclusive, on three transcontinental routes and a route stub between Washington, D.C. and Chicago. The FAA is now in the process of initiating an area-type positive control experiment in the Midwest, which is intended to pave the way for the further expansion of the positive control program.

While the industry supports the expansion of this program as fast as that can be accomplished, it is recognized that the program is directly related to the FAA's ability to provide air traffic control services. If the program goes forward at such a rate that it exceeds the capacity of the air traffic control system, it will produce more harm than good. Flight delays and cancellations will result. On the other hand, if the program does not go forward to the maximum extent possible under the limitations of the air traffic control system, the needs of the increasing volume of air traffic will soon outstrip both the voluntary program of the airlines and the FAA positive control program.

We must have positive control of airline aircraft, and we must have it as soon as the system is ready. To that end, the Congress should support the research and development programs being undertaken by the FAA, and, when that program has borne fruit, the installation and operation of the facilities developed by it.

Senator MONRONEY. In these areas of positive control, for the purpose of the record do you mean positive control of all aircraft in that airspace, or do you mean the positive control of all commercial aircraft in that space?

Mr. BECKER. When we are talking about positive control I have reference to the Civil Aeronautics Board provision of a regulation which allowed the Civil Aeronautics Administration at that time to prescribe areas in which positive control would exist; that is the three transcontinental routes and the route stub between Chicago and Washington. Between 17,000 and 22,000 feet this meant positive control. No one gets into that area under any weather conditions without him being subject to the control of the air traffic control service.

Senator MONRONEY. Anyone crossing those routes would have to go above or below 17,000 and 22,000, is that correct?

Mr. BECKER. That is correct, or get a clearance through it.

Senator MONRONEY. So you do have positive control between those altitudes in these limited areas?

Mr. BECKER. Yes, sir.

Senator MONRONEY. On the others, when you agreed to lower the previously established floor from 18,000 feet to 10,000 feet, this is not positive control, this is merely scheduling by instrument flight plan, oftentimes in generally visual VFR weather, for your airlines to operate?

Mr. BECKER. That type of control protects airline aircraft from other airline aircraft.

Senator MONRONEY. Or perhaps business aircraft or others who would file IFR?

Mr. BECKER. Military will, if they file IFR.

Senator MONRONEY. Are military encouraged to file IFR plans in this airspace?

Mr. BECKER. In 1958 there was some encouragement. I can't tell you frankly what they are doing today. There was a program instituted then. Whether it is still in effect we do not know. We do not know that the National Business Association aircraft indicated that they were going to do the same thing as we were. We are, I should say.

Senator MONRONEY. So if the Business Aircraft Association—I see Mr. Lawton is here and I would like to have him tell us about that in a moment—and if the military, in these altitudes between 18,000 feet to 10,000 feet, all file IFR flight plans, then your only exposure would be to the infrequent use of general aviation aircraft that may be single-motored or others which might happen to wander into those upper altitudes.

Mr. BECKER. Yes, with one correction. You said between 18 and 10. It is above 10—10,000 on up to infinity.

Senator MONRONEY. After you get to 23,000 you have jet traffic which is not under IFR.

Mr. BECKER. A lot of it.

Senator MONRONEY. I mean your military jet?

Mr. BECKER. Military aircraft are under IFR but they have an on-top type clearance which doesn't give you positive control.

Senator MONRONEY. Mr. Lawton, does the Business Aircraft now generally, in those areas, fly according to IFR?

Mr. LAWTON. Senator, it has been my experience that the majority of the aircraft flying that are pressurized aircraft and they do file IFR flight plans the great majority of times.

Senator MONRONEY. Generally the lack of pressurization in general aviation aircraft would keep them by their own choice out of those altitudes?

Mr. LAWTON. Generally, yes, but a great many general aviation aircraft that are equipped with oxygen find that there are advantages to flying at above 10,000 feet, for example, for winds or avoidance of weather. So there is some percentage of this traffic of the single-engine, so-called private aircraft, up there.

Senator MONRONEY. Your exposure between not flying under IFR and the infrequent excursions into those altitudes of nonpressurized planes, would diminish the danger of collision by the greater categories of planes that are flying under IFR on what you might say a voluntary basis.

Mr. LAWTON. That is true.

Senator MONRONEY. Thank you very much. I just wanted to clear that up for the record.

Would you continue, Mr. Becker.

Mr. BECKER. 4. The need for improved air traffic control tools.

The number and size of air traffic control units have increased since the late 1930's in an effort to meet the ever-increasing requirements of air traffic. These increasing requirements have been dictated not only by the greatly increasing numbers of aircraft in service, but also by the use of the airways by aircraft of greatly differing speeds—from the fastest jets to the slowest piston-type aircraft. This latter problem has been aggravated by the use of these aircraft over complex airway routes and terminal patterns.

We have reached the point where the mere addition of more air traffic control units and more air traffic controllers does not produce a proportional increase in service capability. It has become increasingly apparent that we cannot solve the problem simply by more people and more units. The air traffic controller, even today, relies on limited air traffic control tools to perform his job. In the early days, the controller had to use written information on slips of paper, posted manually, to note actual or estimated aircraft positions, in order to determine necessary control actions. Today, although a number of refinements and improvements have been introduced—such as radar and direct communications between the aircraft and the controller—he still relies basically on manual postings of slips of paper to determine necessary control actions.

Obviously what we need are tools which will relieve the controller of clerical and repetitive functions and enable him to confine his activities to the decisionmaking functions necessary to separate air traffic. Stated differently, it is clear that we must progress from our present-day manual system to semiautomatic systems, and, successively, to a fully automatic system. For the immediate future, we need better radar and better techniques for the acquisition of air traffic control data. We need data-processing equipment for the faster use of these data; we need automatic communications facilities between the air and the ground, and between ground stations, to supplement voice communications. These facilities will make possible the automatic processing and display of air traffic control data. They are the subject of research and development programs now already in progress in the FAA. Pursuant to these programs, prototype facilities are being deliver to the FAA for test and evaluation. It is important that the Congress continue to give full support to these programs.

5. The need for procedures and facilities to meet the requirements of jet aircraft.

We believe that the FAA has done an outstanding job in establishing the radar traffic advisory service on the routes for civil jet aircraft by manning certain long-range radar facilities. However, there is room for improvement if the public is to deprive the full measure of benefit from this remarkable aircraft.

Departing jets at many of our busy terminals are delayed by lack of adequate taxiways and bypass areas. On takeoff, because of the air traffic control limitations, the jet may be sent off course a consid-

erable distance or held at low altitudes, thus consuming fuel which could be used to operational advantage later in the flight.

On the enroute portion of the flight, the principal problem is the limited number of altitudes available in areas where radar coverage does not exist. Only four altitudes are available in these areas. This creates serious bottlenecks on transcontinental routes.

The FAA must continue to press toward an early solution to these problems. If the following programs were expedited, it would help solve these problems:

(*a*) Improve those airport and terminal area facilities which presently restrict jet operations.

(*b*) Install additional en route radar to provide coverage of those portions of jet routes where this service is not available.

(*c*) Staff and equip air route traffic control centers so that the present advisory service may be improved to provide actual radar separation for the civil jets. FAA is working on this.

Senator MONRONEY. You have some difficult problems as I understand it where these gaps exist because of high mountainous terrain where it is difficult to get satisfactory radar locations.

Mr. BECKER. That is correct.

6. The need for more airport traffic control towers.

An airport traffic control tower is the key to safe and efficient movement of air traffic on and around the airport. At high density terminals these towers are large and complex and provide a substantial number of services. At smaller airports, the towers are correspondingly small and provide a minimum number of services. However, at both types of airports they perform a useful service upon which the safety of aircraft operating near the airport, as well as landing and taking off, is largely dependent.

The scheduled airlines serve 563 airports in the 50 States. Of these, somewhat less than half have control towers, although all of the large airports, of course, have towers. Obviously the safety and efficiency of an airport would be improved by a control tower. Accordingly, we believe that towers should be established at all airports receiving airline service.

Senator MONRONEY. These figures may be somewhat deceptive. How many airports do the trunklines serve?

Mr. BECKER. About half.

Senator MONRONEY. 250?

Mr. BECKER. Roughly.

Senator MONRONEY. That is the figure commonly given. The others, a good many of them, are served on one flight in and one flight out a day on feeder service. Most of them under VFR. Whether it would be possible to do all the other things that we have to do and still provide tower service for all of the airports is a problem. They have a certain standard, as you know, for landings and takeoffs, before you can qualify. Would you say that this standard is too high and that more airports should have control towers under conditions of less density than is now permitted?

Mr. BECKER. If you don't mind, Mr. Seltzer might be able to help you better than I can.

Mr. SELTZER. The current planning standard which governs the installation of control towers requires 24,000 transient aircraft move-

ments annually. This does not take into account local flight operations that might be in existence at such an airport. Consequently, you could conceivably have a greater number of flights at an airport that are not taken into account in determining whether the airport qualifies for a tower.

Senator MONRONEY. They get credit, however, don't they, for the numbers of aircraft based at that airport?

Mr. SELTZER. That is correct.

Senator MONRONEY. So that takes in, I guess, a part of the equation that justifies that. I think it is weighted heavier for the number of based aircraft than it would be for transient operations.

Mr. BECKER. I think we have to admit that when you get to some of these airports you get down to a point of decreasing return. But somewhere along the line there is a place where most of the airports that we serve should have a control tower.

Senator MONRONEY. I have been rather insistent on some points where you have a very high density of traffic, such as summer resorts and winter resorts, where airline communication is perhaps the only way that they are served, and where the peak load is for 2 or 3 months. They could base the control tower operations even on a seasonable basis, where this traffic is high during those months.

Do you feel that would be a good policy?

Mr. BECKER. Yes, sir, and another point might be made. You wouldn't have to have it 24 hours a day at many localities. You might have it 12 or even 8, whatever is appropriate and makes reasonable sense.

Senator MONRONEY. You may go ahead.

Mr. BECKER. 7. The need for minimum performance standards for aircraft communication and navigation equipment.

The air traffic control system demands participation of its users not only in terms of procedures and methods of operation, but also in the carriage and use of airborne electronic communication and navigation equipment.

The technical and financial capabilities of the various user groups to provide this equipment are widely different. Thus, it is necessary for the common system to be able to accommodate users, equipped only with minimum equipment, as well as those who carry the maximum complement of airborne communication and navigation devices.

The important point is that aircraft other than airline aircraft are permitted to operate over the common airways system using airborne communication and navigation equipment that conforms to no stated FAA minimum standards.

Thus, we have a situation in which some of the airway users—the airlines—are regulated, and the remainder—the military and general aviation—are unregulated by the FAA, with respect to the performance standards of their communication and navigation equipment.

The FAA has the authority to prescribe and should prescribe, minimum performance standards for all users of the common airway system. Unless this is done, we have no guarantee that the traffic controllers will always be able to make proper judgments as to the performance of the aircraft in the common system, and thereby render the safest and most efficient service possible.

We are not advocating that all aircraft, regardless of size, carry the same type of equipment. Obviously, a light aircraft would not need equipment of the same size and weight as multiengine transports. Small transistorized equipments requiring very little electrical power from the aircraft's power supply, are now available.

Thus, many of the previous arguments against FAA performance standards for the communication and navigation equipment of small aircraft are no longer valid.

Senator MONRONEY. This refers more or less to radio?

Mr. BECKER. And navigation equipment. Communications and navigation. I have in mind VOR——

Senator MONRONEY. Direct finding, VOR?

Mr. BECKER. Yes, sir.

Senator MONRONEY. How about DME?

Mr. BECKER. That, too.

Senator MONRONEY. You wouldn't advocate, though, that all light aircraft carry DME?

Mr. BECKER. We haven't advocated that anybody carry DME as yet.

Senator MONRONEY. What part of the transport fleet is equipped with DME?

Mr. BECKER. Very little. There are some jets that have DME equipment, or allowed to have DME equipment. I can't give you a specific answer. There are some jet aircraft that are wired to take care of DME equipment should they come to that point. But a very limited amount.

Senator MONRONEY. How many are equipped with VORTAC?

Mr. BECKER. None.

Senator MONRONEY. Which part do they use? This is the hybrid that came out of TACAN.

Mr. JENSEN. VORTAC as you indicated is a combination of equipment. The airline aircraft are equipped with VOR, which is a portion of the VORTAC. The other portions of it include distance measuring capability which you have just discussed. Then of course the other portion is the military part which comes from TACAN which is not installed in civil aircraft, at least not airline aircraft.

Senator MONRONEY. Your distance measuring equipment is now installed only on a few jets, and it is all DME type, is that correct?

Mr. BECKER. That is DME the—that is TACAN-type DME.

Senator MONRONEY. It is?

Mr. BECKER. Yes. But it does not include the TACAN azimuth system. We use VOR for the azimuth.

Senator MONRONEY. Which is found to be just as good. There is no use obsoleting all the other equipment, is that correct, ground stations and everything else?

Mr. BECKER. Yes, sir. There is one other point. There are some DMET's being evaluated by the airlines. They have it on various equipment, DC–7, Constellation, and so on, to evaluate it maintenance-wise and so forth.

Senator MONRONEY. Generally speaking there is no part of our civilian fleet that has equipped itself to any degree with any distance measuring equipment?

Mr. BECKER. Not the airline fleet, that is right.

Senator MONRONEY. Certainly not general aviation.

Mr. BECKER. I doubt that. I suspect they probably have more DME than the scheduled airlines have. They can answer that better than I. I don't know the answer to that.

Senator MONRONEY. Are we going forward now on two distance measuring ground stations?

Mr. BECKER. No. The distance measuring ground station is a TACAN distance measuring ground station. It will work with a DMET carried by civil users and it will work with the TACAN airborne equipment carried by the military.

Senator MONRONEY. The same station can be adapted to supply information to both types of equipment, is that correct?

Mr. BECKER. That is right. Check me if I am wrong.

Mr. JENSEN. I would say even without the adaptation that the airborne equipment, as I understand it, in either the military or the civil aircraft, will utilize the signal sent out from the ground station for DME purposes. I think, to set the record completely straight, that there is a considerable amount of wiring already in a number of the more modern airline airplanes that is ready for DMET, and some of these are being delivered.

So there is some activity in this area of providing distance measuring capability in airline aircraft.

Senator MONRONEY. I have heard it argued by people who I feel are in a position to know, that once you have both VOR and DME on the plane, then you can plan ahead for your arrival at an airport with almost precise timing so that the control tower will know the arrival schedule of the plane although he may be a thousand miles out, and thus make better planning for landing accommodations. Is that correct?

Mr. BECKER. This is argued. It certainly would help as far as crews, control, and economics of an airplane. But whether it helps a whole lot as to navigation is still a problem the airlines are quizzical about.

Senator MONRONEY. I have heard it also argued that a proper DME, under your IFR plan, you would then not need the large separation that you have now, the forward separation between aircraft.

Mr. SELTZER. This has been discussed quite some time. One of the problems which has cropped up in connection with the use of DME to maintain distance between two aircraft is how the pilots of the two aircraft know their relative distance apart.

Senator MONRONEY. How they would?

Mr. SELTZER. How the pilots of the two aircraft concerned know their relative distance apart. This has posed distinct problems that require communications between the two pilots, particularly the following aircraft, as to the separation. The FAA is working on DMET procedures and has discussed the matter from time to time.

Senator MONRONEY. Thank you.

Mr. BECKER. 8. The need for improved air traffic control communications. The effective operation of the air traffic control system is dependent on a rapid and accurate exchange of a wide variety of information between pilots and controllers, between controllers, and between various air traffic control and operational facilities. This

requires extensive communications networks for air-ground and for point-to-point land communications.

The FAA is actively engaged in the development and evaluation of improved point-to-point communications equipment, including high-speed teletype circuits and computers which will automatically transfer aircraft movement data from computer-equipped air traffic control centers. This development is most important and should go forward at as fast a pace as possible.

Voice communications form the backbone of today's air traffic control airground communications. To satisfy the need for more efficient air traffic control service, a program was inaugurated in 1949 to provide direct radio communications between pilots and controllers in the ARTC centers.

This program improved the safety and efficiency of air traffic control operations by eliminating delays occasioned by the old method of relaying messages between controllers and pilots through an outside communications facility. Furthermore, the availability of this direct communication service is essential to the use of radar by air traffic control.

Quick to realize the benefits of this new communication service, the scheduled airlines installed multichannel VHF equipment in their fleets. This enabled them to contact any of the several air traffic control functions in enroute centers and towers, each of which was assigned a separate radio channel.

Continued increase in traffic volume has dictated the requirement for subdividing workload in air traffic control facilities. Each new control position or function requires its own radio communication channel. Failure to provide these facilities results in communication congestion and traffic delays.

FAA has estimated that it will ultimately require about 300 voice channels to discharge its traffic repsonsibilities. To acquire the necessary VHF radio spectrum for these requirements, 3 megacycles of spectrum assigned to the military and 2 megacycles assigned for airline company communications are in the process of being transferred to the FAA for air traffic control use. Airline aircraft are being equipped with 360 voice channels making it possible for them to communicate with any ATC function.

Unfortunately, however, all user groups are not adequately equipped. Generally speaking, military pilots can only select from among 20 channels, although their equipment has a theoretical capability of about 1,700 channels. General aviation aircraft are also limited. Less than half of their multiengine aircraft in this group, according to a recent FAA report, are equipped with 50 or more voice radio channels.

There are no regulations today governing the minimum communications equipment carried in aircraft, even though they be operated IFR. There is also a lack of Federal regulations requiring the use of two-way radio at airports served by control towers.

The airborne equipment limitations of many nonairline aircraft thus impair the air traffic control system's ability to provide safer and more efficient air traffic control through standardized utilization of direct controller-to-pilot communications.

My statement has dealt primarily with the need for improvement of voice communications. It is well recognized, however, as Mr.

Quesada has previously stated, that this will not provide for adequate communications in the future. Routine information will have to be transmitted through some semiautomatic form of communications equipment such as a data link. The FAA has initiated a research and development program which is expected to lead to the introduction of this type of equipment.

To improve air traffic control communications the following actions should be taken:

(1) The FAA should establish standards which will provide for minimum capability for aircraft intended to be operated IFR.

(2) There should be continued expansion of FAA's direct pilot-to-controller communications program, including the requirement for two-way radio for all aircraft using airports served by control towers.

(3) The FAA project for the development, evaluation and introduction of semiautomatic, and eventually fully automatic air-ground communication should go forward as rapidly as possible.

9. The need for proper allocation of airspace.

Senator Monroney, we endeavored to get that in here.

Senator MONRONEY. We appreciate your having this. It will save your coming back up here when we get to that phase on Thursday.

Mr. BECKER. The airlines have long focused major attention on the problems associated with airspace allocation. On several occasions over the past few years we have appeared before this committee to discuss and suggest solutions to these problems.

Since airspace handling involves the designation of that airspace within which air traffic control services will be exercised and, conversely, the designation of areas within which flight is restricted or prohibited, it is quite obvious that these matters are of vital concern to the airlines as well as all users of the airspace.

The varying activities of these users, in effect, result in competition for allocation of the available airspace. The military, for example, conducts certain operations which require the setting aside of airspace for their exclusive use.

In other cases, the nature of the military activities conducted permits the joint civil-military use of such airspace by the application of special procedures. Another example of this competition is the desire of some segments of general aviation to retain the greatest freedom of operation and therefore the minimum designation of controlled airspace.

On the other hand, other segments of civil and military aviation desire the fullest use of the air traffic control system, which requires greater amounts of controlled airspace to be designated.

One of the major problems in the handling of airspace matters has been to find suitable administrative procedures to provide equitable solutions to these competing demands.

Prior to the establishment of the FAA, the committee structure of the Air Coordinating Committee was utilized for this purpose. Airspace Subcommittee meetings were regularly scheduled and held in various parts of the United States to conduct the initial review of airspace matters.

These meetings, as well as the meetings of the Airspace Division in Washington, were attended by representatives of the CAA—at that time, CAB, the various military services, and the FCC as voting

members and the various nongovernmental airspace user groups as associate nonvoting members.

The Washington Airspace Division conducted weekly reviews of the Regional Airspace Subcommittee actions and formulated coordinated Government recommendations for action by the appropriate Government agency. In most cases this responsibility for action rested with the CAA under the Air Coordinating Committee procedures.

Unanimous agreement of the voting members was required. This power of veto by a single Government agency resulted in unfortunate stalemates on the more controversial airspace matters. In other cases, long delays were encountered. In still other cases, compromises were reached in the effort to prevent stalemates, and these compromises often were not the best solutions to the problems.

In spite of these disadvantages, a large majority of the more routine and less controversial cases were properly handled in methodical fashion.

Looking back on the Air Coordinating Committee airspace procedures, there was one significant advantage. This was the value of the regularly scheduled meetings, both at the regional and Washington level.

These conferences, which were attended by a good cross section of aviation interests, provided an opportunity for full discussion of airspace matters in which each competing interest had full opportunity to discuss its requirements and the proposals for their solution.

Useful ideas were exchanged and the various members achieved a greater insight into the problems of the other airspace users. This often led to equitable solutions which could be agreed to by all interested parties, thus avoiding additional stalemates.

The Federal Aviation Act of 1958 resulted in significant changes in the responsibility for handling airspace matters as well as the administrative means for carrying out this responsibility.

The act recognized the difficulties of the committee approach to airspace matters and gave considerable power to the Administrator of the FAA. Utilizing this authority, the Administrator is now exercising jurisdiction over all airspace matters except those involving international airspace cases, offshore warning areas, and radio and TV transmitting towers.

The exercise of this authority has solved the previously cited deficiencies which existed under the ACC since it eliminated the unanimous agreement requirement and provided a direct means for the resolution of conflicting aviation interests.

While there is no doubt in our minds that the act and the FAA's administration of the act has been highly beneficial insofar as airspace matters are concerned, we do recommend that the FAA give favorable consideration to reinstituting the type of meetings which have proved so valuable in the past. This requires no change in the act as it can be done within the administrative authority of the FAA.

Senator MONRONEY. In other words, you would leave the authority to make the final decision with the Administrator, but you would have consultation before action?

Mr. BECKER. Yes, sir. We do not intend or feel that we should go back to a rule by committee. That proved very inefficient. But

those meetings around the table were very helpful to everyone, and gave an opportunity both in the region and then again in Washington, to discuss these matters.

In the past sometimes the regional meetings would make a decision in one direction. It so happened that when it got to Washington, everybody, including all the agencies sitting around the table, thought that was an error and it was changed.

This type of thing doesn't go on today. At least we have not had very many meetings here in Washington. Whether the FAA is changing the views expressed by their people, in Washington, changing the views of the people expressed in the region, we have no way of knowing today.

In addition to these remarks on the general handling of airspace allocations, there are three airspace matters now under consideration by the FAA which deserve special comment. The first is the FAA's review of all restricted areas. You have previously heard of this program from the FAA, and we merely wish to endorse this effort as one which can, and already has, produced very desirable effects.

The second airspace matter deserving special attention has been identified to your committee as Civil Air Regulation Amendment 60–14. The provision of this amendment which has received widespread attention is the one which would raise the floor of controlled airspace from 700 feet to 1,500 feet above the surface.

It is our view that the alleged benefits to general aviation have been greatly exaggerated. To begin with, the designation of controlled airspace, except in the case of positive control airspace, does not restrict private flying under good weather conditions.

Except in bad weather situations, the private pilot's flexibility of operation is greater than that of the airlines.

The principal restrictions to private pilots in controlled airspace occurs only if the pilot or his aircraft are not qualified for instrument flight. If the amendment were to remain in effect, the primary effect on general aviation would be to permit the private pilot not equipped for instrument flying to fly below an airway between 700 feet and 1,500 feet above the ground when the visibility is less than 3 miles and not less than 1 mile.

For this very limited benefit, the rule would require considerable complexity in the designation of controlled airspace and would decrease the amount of airspace within which air traffic control is permitted to provide service.

For maximum safety, it is highly important that we get the greatest measure of protection possible from air traffic control. The FAA must certainly assure itself that any change in the floor of controlled airspace will in fact at least maintain and preferably increase the level of safety. We recommend that all safety aspects of this problem be carefully considered by the FAA before reaching a final conclusion on this matter.

Senator MONRONEY. Let's go over that again. I am not sure that I understand it. Are you protesting against the raising of the floor from 700 feet to 1,500 feet above the surface?

Mr. BECKER. Yes, sir. Being very blunt about it; yes, sir.

Senator MONRONEY. But this would apply only under IFR conditions, actual weather conditions?

Mr. BECKER. The protection afforded airlines would be IFR or VFR if they had it under IFR or VFR weather conditions if they were under IFR clearance. At least protection from other people.

Senator MONRONEY. I wish you would make that clearer.

Mr. BECKER. Perhaps I can. The floor of the airway today is 700 feet above the ground. If the visibility is below 3 miles, but above 1 mile, private aviation or general aviation can operate below that airway when the visibility is, say, 2 miles.

Senator MONRONEY. Below 700?

Mr. BECKER. Yes, sir.

Senator MONRONEY. But not above it?

Mr. BECKER. That is right.

Senator MONRONEY. The amendment proposes to let them operate up to 1,500?

Mr. BECKER. That is in controlled airspace. There is a lot of area that doesn't have any controlled airspace over it at all so that they can operate up to——

Senator MONRONEY. But if they are going anywhere, if they are going to any kind of——

Mr. BECKER. They have to go under.

Senator MONRONEY. A city that has a control tower, they will be running into the controlled airspace, so that it would be hazardous for them to undergo a flight without getting into a controlled airspace. They can't get into the vicinity of a controlled airport.

Mr. BECKER. That is right.

Senator MONRONEY. They would have to zigzag all around the controlled area or violate the rule, which would be worse. In other words, it is safer for you, it seems to me, as an airline situation, to have space for them to fly in, than to have them feel that 700 is too low because there is a radio tower over here and a big building over there, and for their own protection fly up to a thousand feet or 1,200 feet, thinking I would rather be safe than hit something.

Mr. BECKER. If they were coming into an area where you have an airport with a control tower, there would be a control zone around it and you would have limitations there, too, as to visibility. I am talking about actually getting into the airport.

You mentioned that at 700 feet you have to wander around between towers, if there are a lot of them around. Our concern is that if you raise this to 1,500 feet the towers are going up to 1,500 feet, too.

Senator MONRONEY. That doesn't necessarily follow unless the FCC gives permission over the objection of the FAA. It is not automatic. Of course, buildings may be able to go up there, but that is another problem.

Do you need that additional space down to 700 feet? Would it help you in your commercial aviation?

Mr. BECKER. Yes.

Senator MONRONEY. Why?

Mr. SELTZER. We are not arbitrarily opposed to making available airspace to other users. The point that concerns us is that any raising of controlled airspace floors can have a detrimental effect upon the safety of an airline operation which depends upon the floor of the controlled airspace to get its air traffic control service.

For example, if you raise the floor of a controlled area, or a controlled airway, higher than it is at present, you increase the amount

of airspace below the control floor which is without air traffic control service and thus an IFR flight by an airline has no protection.

Mr. BECKER. There is one more part to that. If this IFR flight by the airline stays above, and in this case goes to 2,000 feet, which would be the first cardinal altitude, you have taken away an altitude that can be used by traffic control to move traffic efficiently. This we know. And this would hurt quite a number of areas in the United States, particularly in the eastern area, say, the Appalachian Mountains.

Senator MONRONEY. 700 feet has been in use a long time, historically?

Mr. BECKER. Since 1917.

Senator MONRONEY. As it gets into a controlled area, though, or near a city, if he is flying in this kind of weather he would be under the control tower and would have to be flying at his assigned altitude. Therefore, he would be controlled, would he not?

Mr. BECKER. He wouldn't be permitted in there under certain conditions. But the traffic controller has some flexibility to let him in, yes. He would have to get in touch with communications to begin with.

Senator MONRONEY. If he comes in the range of the landing pattern of an airport he would then be required to report to the control tower and ask for an assignment of altitude, wouldn't he, under present regulations?

Mr. JENSEN. Senator, if this sounds like a difficult subject to explain, it is.

Senator MONRONEY. I agree.

Mr. JENSEN. I think the best way to come around to your question is to go back a little bit and to indicate that there are various forms of controlled airspace, and there are control zones around many airports, and most of those which have instrument approaches conducted. These control zones extend right down to the ground. This is so that the airplane coming into the airport will be contained in controlled airspace and the separation can be provided if he has to go IFR.

Outside of this area there are controlled area extensions which were of relatively unfavorable status until this 60–14 amendment was proposed, which under the old procedures prior to 60–14 had a floor of 700 feet, and which filled in areas outside of the controlled zone.

Senator MONRONEY. Actually 700 feet is the ceiling, not the floor?

Mr. JENSEN. It is the floor so far as control area extensions. It was a floor, and above——

Senator MONRONEY. It is the floor down.

Mr. JENSEN. It is the altitude above which the airspace is designated as controlled airspace.

Senator MONRONEY. It would be a ceiling for the fellow underneath and a floor for the traffic on top?

Mr. BECKER. That is right.

Mr. JENSEN. There are also the airways, and under the old rules these also had a floor of 700 feet. Then way above this, and which gave us some difficulty in trying to state this clearly, there is a continental control area which fills in all airspace above 24,000 feet.

With the proposal, as the amendment in 60–14, it was recognized that if you raised the floor along the airways from 700 feet up to 1,500 feet, that this would leave some airspace around airports that would not be controlled airspace, and therefore an airplane wanting to fly IFR in weather would be exposed to uncontrolled airspace in cer-

tain areas, and therefore there was a proposal contained right in 60–14 which provided for greater use of controlled area extensions. They were called, I believe, terminal control areas. These continued the 700-foot floor or ceiling, as you wish to call it, in order to fill in this airspace as controlled airspace around the airports.

When we had some people look into this amendment and the effect of it, and actually applied it to a large area in the northeastern part of the United States, to see what would have to be done in the designation of airspace so that aircraft would receive the required amount of protection for IFR, it meant the designation of so many terminal control areas of such irregular shapes in order to do the job, along with the control zones which already exist, that it becomes what we tried to quickly say, "a very complex airspace designation problem." And a private pilot trying to work his way through, at least in the northeastern part of the United States, under such a proposal, would certainly find it not only complex but very difficult to go anywhere. All of this, I would like to reemphasize, is effective within this 3- and 1-mile visibility situation. If the visibility is more than 3 miles, all of this becomes immaterial because he can go ahead anyway.

I don't know whether this helps very much. This is the best I think that we can say.

Senator MONRONEY. It is a tough problem.

Mr. BECKER. That is correct.

Senator MONRONEY. Go ahead.

Mr. BECKER. The third matter deserving special attention is the FAA's program to revise the airway structure by instituting low altitude, medium altitude, and high altitude airways, or routes. This has involved a rather extensive reappraisal of aviation requirements and is being conducted with good coordination between Government and industry. We feel that widespread benefits can result as this program comes into being.

In conclusion, Mr. Chairman, may I point out that while my statement has, in part, been critical, we believe the criticism is constructive. We are vitally interested in the subject of air traffic control—indeed, the airlines are proud of the fact that they originated the first ATC system—consequently, we want to help in any way we can to improve the common system.

The FAA has done a splendid job in this field and we are sure their future efforts will be equally productive. We stand ready to help them at all times.

Senator MONRONEY. Thank you very much for this statement, Mr. Becker.

Let me ask you one question and then we will recess.

We had some testimony the other day about putting in specialized rules for takeoff between certain hours at Los Angeles that will be followed by other takeoff rules undoubtedly at Idlewild and many other jet airports. In connection with that, whatever we do at one airport to close it from 10 o'clock at night until 7 o'clock in the morning, will not this eventually spread to where it will be that what you give to Los Angeles you must give to Queens, Long Island, and what you give to Miami you must give to O'Hare, and various things like that, and if it is not on a national pattern will it not further complicate the large library that has to be carried by pilots to figure out what airports they can come into, or when, or take off from?

Mr. BECKER. In our comments to the FAA on that particular proposal—which it is—we expressed our concern over just that point, as a matter of fact. This downwind takeoff business is a serious one.

Senator MONRONEY. You are not supporting downwind takeoffs by jets?

Mr. BECKER. No, sir. We do a little of it, Senator, up to a few miles an hour. It is done every day. But when you get up to 10 knots, that is pretty bad.

Senator MONRONEY. Up to maybe 5 miles an hour, it is almost a dead calm.

Mr. BECKER. Yes, sir.

Senator MONRONEY. But when you get above that, it doubles. In other words, if we takeoff with a 10-mile downwind, then you are sacrificing the 10 miles' lift that you get out of taking off into the wind, plus the additional power required to overcome that when taking off downwind. In other words, it takes 20 miles additional thrust to make up for the 10-mile nose wind that you would ordinarily have.

Mr. BECKER. Another problem, too, if you have to stop—if you get a malfunction and have to stop, the wind isn't helping you stop: it helps keep you from stopping. We are concerned about it. We are concerned in this area of noise abatement rules that safety be predominant. We are real strong on that.

Senator MONRONEY. After all, the safety of the people on the ground is also involved, not just the people in the airplane.

Mr. BECKER. That is right.

Senator MONRONEY. Noise is distracting but it may not be tragic. Certainly, if you compromise safety over a crowed area for a downwind takeoff or for bad landing procedures, simply for noise abatement, you can endanger the lives of hundreds of people on the ground as well.

Mr. BECKER. Yes, sir. On the other hand, we realize that we are simply a noisy neighbor and we have to do whatever is reasonable within the bounds of safety to keep things reasonable around an airport.

Senator MONRONEY. You would agree, though, that any rule that made the margin of safety rather close, that the noise abatement would either have to be accommodated by nonscheduled flights or takeoff in proper wind direction?

Mr. BECKER. That is right. Safety first.

We couldn't go for closing the airports because if we did that type of thing that you mentioned, it would mean that our last flight out of it, for example, Los Angeles to New York, the last flight out of Los Angeles would be at 3 o'clock in the afternoon, in order to get into New York within the time limit.

Senator MONRONEY. I know, but you might have to consider that, if this is important, and certainly it is quite important perhaps to your schedules. But you can't compromise with safety and you have to consider Ontario or some other takeoff point such as we are going to consider Dulles Airport as necessary. These things all raise questions where you may have feeder airline service to your jet airports before you get through.

Mr. BECKER. It would be a disservice to the public.

Senator MONRONEY. Thank you very much for your helpful statement. We appreciate your appearance.

The committee will not be able to hear witnesses tomorrow because none are ready to talk at this time on the airspace problem.

We will stand in recess until Thursday morning at 10 o'clock.

(Whereupon, at 5:20 p.m., the subcommittee was adjourned, to reconvene at 10 a.m., Thursday, January 28, 1960.)

# REVIEW OF THE FEDERAL AVIATION ACT

THURSDAY, JANUARY 28, 1960

U.S. SENATE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
SUBCOMMITTEE ON AVIATION,
*Washington, D.C.*

The subcommittee was called to order at 10 a.m., in room 5110, New Senate Office Building, Hon. A. S. Mike Monroney (chairman of the subcommittee) presiding.

Senator MONRONEY. The Subcommittee on Aviation will resume its hearings.

We are glad to have back Gen. E. R. Quesada, Administrator of the Federal Aviation Agency, accompanied by Hon. James T. Pyle, Deputy Administrator; Mr. David D. Thomas, Director, Bureau of Flight Standards; and Daggett H. Howard, General Counsel.

Will you come forward to the witness stand?

Today we are dealing with the matter of airspace management, and we are very happy, indeed, to have the report of the Administrator and his aids.

You may proceed in any way you wish, General Quesada.

## STATEMENT OF HON. E. R. QUESADA, ADMINISTRATOR, FEDERAL AVIATION AGENCY; ACCOMPANIED BY HON. JAMES T. PYLE, DEPUTY ADMINISTRATOR; DAVID D. THOMAS, DIRECTOR, BUREAU OF FLIGHT STANDARDS; AND DAGGETT H. HOWARD, GENERAL COUNSEL

Mr. QUESADA. Thank you very much, Mr. Chairman. We are very happy to be here again to assist you in your committee, and your inquiries.

We have in mind making a presentation on airspace management. Mr. David Thomas, as the Director of the Bureau of Air Traffic Management, will make the presentation.

Senator MONRONEY. Thank you very much.

Mr. THOMAS. Thank you, Mr. Chairman. I have a prepared statement. With your pleasure, I would like to read it.

Senator MONRONEY. Yes, sir.

Mr. THOMAS. Mr. Chairman and members of the committee, I would like to express appreciation for the opportunity to present our views on the subject of airspace. At the outset, it might be helpful to contrast the situaion before the advent of the Federal Aviation Act of 1958 with the situation as it now exists under the new act.

Prior to the Federal Aviation Act, responsibility for assigning use of the navigable airspace was to be found in several agencies of the

executive branch of the Federal Government. For example, under section 4 of the Air Commerce Act of 1926, the President was authorized to designate airspace reservations, commonly known as prohibited areas. The same act also permitted the Secretary of War to designate military airways and to control their use.

The Civil Aeronautics Board interpreted section 601(a)(7) of the Civil Aeronautics Act of 1938 as giving them authority to control the use of the airspace. The Board, however, delegated this authority to the Administrator of Civil Aeronautics. As a practical matter, this authority was only exercised with approval of the Air Coordinating Committee.

Immediately prior to the Federal Aviation Act, the Air Coordinating Committee was composed of representatives from eight agencies of the Federal Government, each of which agencies had a vote. According to the terms of the Executive order which created the ACC, unanimous approval of the voting members was required before action could be taken.

In addition to the eight Federal agencies which comprised the ACC, as such, there were a number of organizations representing substantial aviation interests which were designated as associate members. These associate members were permitted to attend meetings of the various divisions, panels, and committees of ACC, and to participate in the discussions, but on a nonvoting basis.

The requirement for unanimous approval of any airspace matter brought before ACC had the effect of watering down or compromising the chances for effective action in many instances. In addition ACC procedural rules were such as to invite one delay after another. These formalized procedures provided for transmittal of agenda items to be discussed at any particular meeting, the holding of the meeting itself, and then transmittal of the minutes of the meeting, which were subject to correction and revision.

ACC's procedures further provided for tabling and endless postponement of agenda items, which resulted in still further delays before a decision could be reached. Thus the situation lent itself to diffusion of responsibility, indecision, delay, and watered-down policies.

The Federal Aviation Act changed this. Section 307(a) of the act authorized and directed the Administrator of the Federal Aviation Agency to plan for the use of the navigable airspace and assign its use under such terms, conditions, and limitations as he deems necessary to insure safe and efficient use. Congress made it clear that this authority was to be plenary, and vested entire responsibility for airspace management in a single Federal organization.

Several other sections of the act are worth mentioning in this connection. Section 301(a) states, among other things, that in the exercise of his duties and the discharge of his responsibilities under the act, the Administrator shall not submit his decisions for the approval of, nor be bound by the decisions or recommendations of, any committee, board, or other organization created by Executive order. This leaves no doubt that the Congress meant to divorce the management of airspace from the ACC.

Section 306 states that, in exercising his authority and discharging his duties under the act, the Administrator shall give full considera-

tion to the requirements of national defense, commercial and general aviation, and to the public right of freedom of transit through the navigable airspace.

Still another important provision is contained in section 307(d), which requires the Administrator to exercise his rulemaking authority relating to airspace management and air traffic rules in accordance with the provisions of the Administrative Procedure Act.

As your committee is aware, one of the stated purposes of the Administrative Procedure Act is to provide for public participation in the rulemaking processes carried on by agencies of the Federal Government.

As one of our first steps to carry out the clear intent of Congress and assume the management of airspace, we adopted part 409 of the regulations of the Federal Aviation Agency, which contained the procedures and rules for airspace assignment and utilization. Part 409 was published in the Federal Register of May 1, 1959, and became effective on May 15, 1959. This date marks the change from the old committee method of handling airspace matters to procedures applying the principles of the Federal Aviation Act.

These new procedural rules are basically very similar to those utilized by most other Federal agencies having rulemaking authority. In brief, they permit any person to file with FAA a proposal requesting that an airspace assignment be made, modified, or revoked. This proposal need not be in any special form, although certain necessary information is required to be submitted. These proposals may thereafter be the subject of a notice of proposed rulemaking and ultimately a final rule.

On the other hand, if a proposal does not appear feasible or its adoption would be contrary to public interest, it may be rejected. The FAA can, of course, take the initiative itself in making such proposals. Notices of proposed rulemaking and final rules are published in the Federal Register. In addition, there is direct mail distribution to all persons known to FAA who have an interest.

The procedures also provide for informal public hearings whenever it is determined that such a hearing would enable FAA to make a more informed decision. These hearings are normally held at a place in the vicinity of the airspace under consideration.

Upon announcement of these new procedural rules, comment was received from several segments of the aviation community. There appeared to be two main criticisms. The first was to the effect that FAA had acted precipitously in adopting the procedural rules. The second was to the effect that we had divorced airspace management from the old ACC procedures without substituting another committee type of procedure.

As for the first of these, it is evident to anyone conversant with the Federal Aviation Act that FAA would remain impotent in the field of airspace management until procedural rules are adopted. I venture to say that, if we had not adopted part 409 until every segment of aviation was completely satisfied, we would still be merely talking about procedures, rather than taking effective and fairly considered airspace actions as we have been doing since May 15.

As for the second, the suggestions made by some aviation interests, if adopted, would have resulted in little more than perpetuation of the

ACC system under another name. Although part 409 clearly provided for informal discussions as part of the rulemaking process, they pressed for a formalized committee operation both at the Washington and FAA regional levels.

This operation was to include a formal agenda of all airspace proposals and regular scheduled meetings of the committees to consider the entire agenda. Moreover, there were to be full, formalized minutes of each meeting, on which all participants would have an opportunity to comment.

Bearing in mind the volume of airspace cases we have to handle, this procedure would have placed demands upon our organization beyond available manpower. It would also have resulted in superimposing the old ACC type of procedures upon the normal requirements of the Administrative Procedure Act. Thus I believe these suggestions would have resulted in joint or collective management of airspace by committee, which would have defeated a major objective of the Congress in enacting the Federal Aviation Act of 1958.

I would like to bring out one particular point relating to the FAA procedures. You will recall that, under the ACC procedures, the associate members were not entitled to vote on the decisions made by the ACC, but users who were within the Federal Government did have a vote.

Under the new procedures aviation interests not only can make themselves heard, but their comments and recommendations are entitled to no less weight than those of any Federal egency. Moreever, the FAA is in a position to take prompt action even where another Federal agency is in opposition.

After considerable correspondence and many discussions with aviation interests, FAA prepared and distributed a pamphlet entitled "FAA and Airspace," in August of 1959. This pamphlet had a twofold purpose. First, it explained in simple language the workings of the Administrative Procedure Act, and FAA's procedural rules, as they applied to the handling of airspace matters. Second, it stated the manner in which interested persons could most effectively make themselves heard by participating in our procedures. Among other things, it clearly restated our intentions to have informal discussions both prior to, and during, the rulemaking process contemplated by part 409.

Parenthetically, I might add that some 3,700 copies of this pamphlet have been distributed to the public.

Mr. Chairman, we have copies of the pamphlet with us, if the committee would care to look at it.

Senator MONRONEY. This is the pamphlet?

Mr. THOMAS. Yes, sir; that is the pamphlet.

Our informal procedures provide for discussions and coordination with interested segments of the public. Such discussions are held both in Washington and at regional level on a periodic basis, and are designed to provide FAA a more informed basis for taking airspace actions and to expedite the rulemaking process by reducing the need for public hearings. We assure your committee that neither by our formal or informal procedures has the FAA abdicated its role as manager of the airspace.

Since the effective date of part 409, which was May 15, 1959, we have, of course, gained considerable experience. In order to insure that the procedures are functioning as planned we have closely monitored all aspects of the airspace assignment machinery both formal and informal. We have already taken certain correction actions which experience indicated to be advisable.

For example:

1. The extension of time for public comment with respect to our notices of proposed rulemaking in airspace cases has been extended in normal situations from 30 to 45 days.

2. Chart presentations will accompany our notices of proposed rulemaking or final rules in complicated cases.

3. At the Washington level, we are closely monitoring the handling of airspace matters at the regional level to insure that their procedures are consistent with Washington policy. To this end we have established a direct line of authority between headquarters here in Washington and the regional personnel who are engaged in airspace activities.

It may be of interest to the committee to know that under the new FAA procedures approximately 800 airspace proposals have been studied. Some of these were withdrawn by the person making the proposal. Of those which were not withdrawn, 10 were formally rejected by FAA because it was not felt that their adoption would be in the public interest. For the period May 15 to December 31, 1959, 317 notices of proposed rulemaking were issued and 223 final rules relating to airspace assignment were adopted.

I would now like to refer to certain FAA programs as they relate to airspace.

*a.* Airways and air routes: The airway and route structure, so vital to safety and the efficient utilization of airspace, has been under intense and continuing study by FAA. The basic airway structure consists of a complete network of low frequency airways and the newer VOR airways, both extending from the surface to 24,000 feet above sea level.

These airways serve the needs of military and civil operations involving, for the most part, the use of propeller-driven aircraft. Because the basic airway structure was originally designed to serve short-haul requirements, some medium and long-haul flights are penalized because they must fly indirect flight paths. Moreover, because of closely spaced navigational aids, they must make frequent changes in radio frequencies and make frequent position reports.

We have recently completed preliminary planning with respect to the airway structure at intermediate altitudes. In the spring of 1960 we will be ready to lower the top of this intricate network of routes to 14,000 feet. We will then superimpose a new airway structure between the 14,000 and 24,000 foot levels which is specifically designed for long-haul propeller-driven aircraft operations and medium-haul turbo-propeller operations. This intermediate lawyer of airways will be straighter, use navigational facilities spaced farther apart, and require fewer position reports.

As part of our overall airway program, new airways have been added as the demand arose, and existing airways have been simplified to the extent possible. Additionally, we have also taken action

to eliminate segments of existing airways which are not required. Most of the reductions have been in the older low-frequency airways and have resulted from a growing use of the more modern VOR airways and their associated VOR radio ranges.

Of particular interest is the jet route structure, which presently has a floor of 24,000 feet. Prompt inauguration of turbojet aircraft service by scheduled air carriers has been made possible by the development of a basic civil jet route structure now totaling 25,455 miles in the continental United States. The timing of this program has been critical, in order to meet inauguration dates of air carrier jet service over new routes, and to accommodate last-minute changes by the carriers necessitated by availability of equipment and flight crew training.

Incidentally, Mr. Chairman, I would like to add that there is no airway structure above 24,000 feet, but we have the jets specifically marked so that we can provide these very special services given the civil jets.

*b.* Location of airports, military airbases, missile and rocket sites: Section 307(a) of the Federal Aviation Act directs the Administrator to develop plans for and formula policy with respect to the use of the navigable airspace. This responsibility is directly related to that set forth in sections 308 and 309 pertaining to the construction and modification of airports, military airbases, and missile and rocket sites.

In the past year, some 156 civil and military projects were studied. Of these, 93 proposals were found acceptable from the standpoint of the safe and efficient utilization of airspace by aircraft. Twenty-six additional propsals were found acceptable with some limitation on the type of operation to be conducted. Eight other proposals were determined to be unacceptable and modification or withdrawal of the project was recommended. Ten proposals are still under study.

As an example, in one case a new municipal airport to serve the city of Tacoma, Wash., has been proposed. This is a particularly complex situation, in view of the proximity of the busy Seattle-Tacoma Airport, two other municipal airports, several private airports, and three military bases. The dual responsibility of the Agency under the Federal Aviation Act, and the Federal Airport Act, made it desirable to hold a public hearing at Tacoma in order to insure that FAA would make a fully informed decision. The hearing was held on December 2 and 3, 1959, and our analysis should be concluded this month.

Drawing upon our experience in reviewing the military construction program for fiscal year 1960, and its effect on the navigable airspace, the FAA collaborated with the Department of Defense in drafting internal DOD procedures to be utilized by the military departments. These procedures will aid the military in supplying us with information regarding proposed military construction, so that we can better forecast its impact on the airspace picture.

*c.* Obstructions to air navigation: Aside from the general problem of obstructions to air navigation, there is one particular matter which is of mutual concern to both the aviation industry and the radio and television industry. This relates to the location and height of radio and television transmitting towers.

In this connection, as an adjunct to the activities of ACC, the Federal Communications Commission adopted part 17 of its regulations. These regulations contain criteria for detremining whether applications for radio and television towers require special aeronautical study. If FCC determines that such an application does require special aeronautical study it is referred to ACC for coordination with aviation interests.

We have requested FCC to change its procedural rules so that FAA, as manager of the airspace, will conduct the special aeronautical study. FAA would undertake to obtain the views of aviation interests and to provide FCC with its position and the opinions of the various segments of the aviation industry. We are expecting to hear from FCC in the very near future. In the meantime, we are operating under, and in accordance with, the present FCC rules. We are, however, making our decisions independently of the ACC.

Senator MONRONEY. Would you amplify that a little bit? In other words, if a proposal for an extremely high television tower was made, the FCC would then refer this not to the FAA, which has charge of airspace now, but to the old Air Coordinating Committee; is that correct?

Mr. THOMAS. Yes, sir.

Senator MONRONEY. You would find yourself, even though you are designated by the Federal Aviation Commission Act to be in control of navigable airspace, having only one voice while perhaps a colonel in command of a base could be representing the Air Force and saying, "Oh, this tower is just exactly what we need. We would just like to have a tower in this airspace," because he and the owner of the television station may be friends or something of that sort.

In other words, you could have divided authority representing air safety?

Mr. THOMAS. That is correct, sir. This is why we are working with the FCC to eliminate this situation.

Senator MONRONEY. This does not require a change of law?

Mr. THOMAS. No, sir.

Senator MONRONEY. All they would have to do is refer to the FAA for coordination of airspace users to get the consensus as to whether they feel it is dangerous. If they feel it is a great danger to air navigation then you would speak with one body and with one authority before the FCC instead of now perhaps facing three or four different viewpoints on the situation?

Mr. THOMAS. Yes, sir; that is correct.

*d.* Special use airspace: "Special use airspace" is a term applied to segments of airspace which are set aside for specific purposes and through which the public does not have normal freedom of transit. They are set aside because of the presence of aeronautical activity, such as air-to-air gunnery, bombing, and artillery fire, which would be a hazard to normal air traffic. Such assignments of airspace are characterized as prohibited areas and restricted areas.

There is another type of special use airspace known as a warning area. These have been designated in airspace overlying waters adjacent to the United States, but beyond the 3-mile limit. Transit through a warning area is not prohibited. The designation merely serves to notify pilots that aeronautical activity may be carried on

in such an area. Most of special use airspace is designated in the form of restricted areas.

FAA has directed particular attention to a critical review of special use airspace. It is the announced policy of FAA to release for general public transit all airspace presently restricted for which there is not complete justification.

In this connection, FAA has developed an accurate inventory of special use airspace. Also it has been conducting detailed studies and has been seeking to obtain all available information relative to the actual use of such airspace.

When FAA assumed responsibility for airspace assignments already in existence, it found a dearth of reliable data regarding the type and volume of activity conducted in restricted airspace. In many cases, areas had been designated before or during World War II, and the justification for their existence was described only in general terms. Even with respect to restricted areas more recently approved by ACC, only a very general justification was supplied.

In this connection, on July 23, 1959, FAA published Special Airspace Regulation No. 1, which required the controlling agency for each restricted area to provide a detailed utilization report for the period July 1, 1958, through June 30, 1959. This has already produced tangible results in that many restricted areas have been voluntarily released by military agencies.

Senator MONRONEY. Could you give us a few examples? I think this has been a very successful part of the agency's work. I have heard some reports where certain generals in areas had their own private noise-abatement program for no other reason than that they didn't wish to be disturbed by the noise of aircraft.

I compliment you on what you have done, first in making them justify the continued withdrawal of that airspace from commercial or public use, and still keep it frozen as to classified or military uses when there were no current needs for it.

This running program of use it or lose it system you apparently have put in should yield a good deal of airspace later as it becomes effective.

Mr. THOMAS. Mr. Chairman, we have several examples of that. I would like, if I may, to have Mr. Charles Carmody, who is the Chief of Airspace Utilization, to cite some of the examples.

Mr. CARMODY. Later in the statement there are statistics with regard to these areas. However, insofar as a few of the examples are concerned, we had a restricted area of 3,518 square miles in the vicinity of Presque Isle, Maine. It was assigned to an Air Force activity. We examined the utilization being made and found that the Air Force activity which had been using it had been transferred out of the area, and proceeded with revocation of it since it was not presently being used.

Another location, another area, of 693 square miles in the lower Lake Huron area in Lake Michigan, had been assigned to a fighter group at Selfridge Air Force Base. We pointed out that the activity being conducted in this area was not sufficient to justify its continuance, and the Air Force replied immediately, agreeing with our statement, and we proceeded to revoke that area as well.

We had an area near McHenry, N. Dak., assigned to the State National Guard for the State of North Dakota. Their current activ-

ity had changed to the extent they were no longer using it. We proceeded with revocation of that area, as well.

Senator MONRONEY. Were these restricted areas we are talking about here?

Mr. CARMODY. Yes, sir; in each case these were restricted areas, areas through which flight of aircraft and in normal transit was prohibited.

Senator MONRONEY. They would have to detour around these areas you are talking about?

Mr. CARMODY. Yes, sir.

Mr. QUESADA. Mr. Chairman, I might cite a few cases that will ring a bell quite close to home.

In the immediate vicinity of Washington, and just south of here, there are two restricted areas, Camp A. P. Hill, an Army camp, and Dahlgren. As time goes on the use of this airspace has changed. With the consent of the Army, we went in and examined the use of the airspace in the vicinity of A. P. Hill, and as a result have made a substantial modification in its use.

To a large extent it is now available for public use.

The Navy, likewise, adapting itself to the realities of today, have reduced the size of the restricted area at Dahlgren.

Another area close to here is Aberdeen, which lies on one of the heaviest traveled airways in the world. It is a very large restricted area. In cooperation with the Army, we had a contractor, the Cornell Aeronautical Laboratory, go up to Aberdeen and make a minute examination of the use of the airspace there in terms of exactly when it was used, exactly what portion of it was used, exactly what portion of it was used during the day, exactly what portion of it was used during the night, and they made a very complete report.

As a result of this report, we have since made a very substantial change in the size and shape of this restricted area, balancing the equities between the public, on the one hand, and the military requirements, on the other.

These are three examples very close to home.

Senator MONRONEY. They have all been done by consultation and finally an agreement. But you did have the authority without the interminable delays that were occasioned under the old Air Coordinating Committee that virtually resulted in no yielding of airspace?

Mr. QUESADA. That is correct. I wouldn't want to leave the impression, sir, that this was always through an agreement. Nobody wants to give anything up. But our reasons were justified, and I think the people that were the custodians of this airspace are reasonably happy. At least, they had an opportunity to express themselves.

Senator MONRONEY. You mentioned a while ago, Mr. Thomas, the special uses reservations. This would be something like Cape Canaveral, or Wallops Island, and these others that seem to sit right on the airways at times.

Mr. THOMAS. Sir, we have coined the phrase "special uses," I think, for want of a better term, to encompass all types of airspace set aside like Wallops Island, Cape Canaveral, or bombing any restricted or prohibited or any other area which is set aside for the special uses of some activity, and not available for the use of everyone.

Senator MONRONEY. For instance, I know at Cape Canaveral upon a firing, the planes must take the inland route. At times when they

are not firing the chances are they permit them to use the ocean route.

Mr. THOMAS. Yes, sir. We have the control-firing concept, and actually working in any one of two ways. In the case of the missile firing down at Cape Canaveral, if they are going over Carter 1150, which is the oversea route, we suspend operations over that route for an adequate time before and after the firing.

We have other operations where, by observation, we see that there are no aircraft in the way and the firing can be conducted.

In using dry-charge missiles at Wallops, we frequently by observation and knowledge fire without stopping any air traffic, letting it proceed, and then controlling the missile firing, whereas down at Canaveral we divert the air traffic and let the missile firing go ahead.

We work it both ways.

Senator MONRONEY. These are, of course, the spectacular. What about the use of these infrared airborne missiles, air-to-air missiles? They have to be pretty closely confined, do they not, because if they are using those you have got to be sure none of them get away.

Mr. THOMAS. Yes, sir. They are not very discriminatory. They are looking for heat. Consequently, they are all conducted within restricted areas, which is closely marked to see that other traffic does not get in there.

Senator MONRONEY. For my information, and for that of the committee, do they check in and check out all of these infrared that they fire so that you know there are none wandering loose up there that haven't been accounted for?

Mr. THOMAS. They are all of short duration, and they are under the responsibility of the range safety officer at the particular range. They do not, within a restricted area, inform us of each firing; no, sir.

Senator MONRONEY. That is the responsibility of the military?

Mr. THOMAS. Yes, sir; it is.

Senator MONRONEY. But you are satisfied that they observe the fact that they have accounted for all of the airborne infrared that is fired, and they know that it is now dead?

Mr. THOMAS. Yes, sir. We work with them extremely closely on all of these activities and spend a great deal of time on their ranges.

We are quite satisfied with the safety mechanisms that they have.

Mr. QUESADA. Mr. Chairman, the return of Senator Thurmond reminds me of another instance where we have attempted to make airspace available to the Military Establishment, on the one hand, and available to the public, on the other.

In his area, and in an area in which he had particular interest, at Buford, the Marine Corps has a very large operation there. There was a restricted area, if I recall correctly, from the ground up. In order to balance the equities a little over a year ago we modified the shape of this restricted area so that the Marine Corps could use it, giving consideration to the performance of the aircraft they used there and made one of these step corridors so they could get out to sea, and at the same time traffic could migrate up and down the coast under it.

At the time it was indicated that this situation would exist for 1 year, after which the restricted area that remained would be rescinded.

At the end of the year this was modified, and now it is a freer area. This was giving the Marine Corps an opportunity to adjust itself, on the one hand, and make available airspace, on the other, and it lasted a year and has since been withdrawn, as we initially indicated.

Senator THURMOND. Mr. Chairman, I would like to take this opportunity to publicly commend General Quesada for the fine manner in which he handled that situation. It is a very delicate situation. It is one that could have been extremely controversial. I think the way he handled it inured to the benefit of all concerned, including the military.

Senator MONRONEY. I am glad to have that testimony in the record.

Mr. QUESADA. Thank you very much, Senator Thurmond.

Senator MONRONEY. You may proceed.

Mr. THOMAS. Thank you, sir.

We have found in some instances the volume and type of utilization of special use airspace did not justify the denial of much of such airspace to the general public. We have also found that certain special activities could be combined, thus eliminating the need for all or a portion of the restricted area.

We have discovered that it was possible not only to reduce the size of some restricted areas, but also to compress them as to altitude or time.

Special emphasis has also been placed on what is known as a joint-use concept. This concept envisions freedom of transit through special use airspace during the time it is not in actual use for the purpose for which it was established.

Overall, our program relating to special use airspace has resulted in the following actions. As of June 1, 1959, there were 260 restricted areas in U.S. territory. In the 7½ months since May 15, 17 areas were revoked and 7 new areas were established; furthermore, 5 areas were reduced in size, while 1 was increased. These actions resulted in a net reduction in restricted airspace of 10,000 square miles.

Seven other areas were compressed in altitude, and three were compressed as to the number of hours per day they were effective as restricted airspace. During the last 7½ months of ACC stewardship restricted airspace increased by 14,999 square miles.

I think at this time I would like to show a chart that graphically shows the increase.

Mr. Chairman, this chart is an accounting of restricted airspace. Starting in 1950, there were 58,720 square miles of restricted airspace in the continental limits of the United States. This increased, and on January 1, 1959, when the FAA came into being, there were 126,670 square miles. However, this did not include the areas in Alaska, Hawaii, Puerto Rico, and Guam, which were not included in the count. We had to measure that, although they were published on maps. We found that the total inventory was 130,525 square miles.

The increase continued under the ACC until we changed our procedures on May 15, and there it peaked at 143,678. As of that date it has gone down quite markedly, we think. By the end of the year it was down to 133,748 square miles. Since January 1 we have already reduced it another 1,200 square miles.

Copies of the chart are available.

Senator MONRONEY. Sometimes is it not a fact, Mr. Thomas, that the measure of the utility of airspace might not necessarily be the huge blocks that might be in remote places over seldom-traveled air routes, but the enclaves that sometimes wedge into your high-density routes make the acquisition of even a limited amount of airspace additions extremely valuable for air traffic?

Mr. THOMAS. Yes, sir; it depends entirely on its location and configuration as to its effect on the public transit.

Senator MONRONEY. Have you been able to do very much more than Aberdeen on this Washington-New York run? The committee heard much testimony on the various reservations that go in and out of that to make the navigation of this high-density route very difficult.

Mr. THOMAS. There are some other minor, in terms of size, that we are working on on that route.

Do you wish to comment on that?

Mr. CARMODY. In our program of the areas which we are examining, there are a number of areas between Washington and New York which are being processed right now for either revocation or reduction in size. In addition, along the coastline there are a number of such areas which have been blocking additional coastal routes between Washington and New York. These are also being modified. However, we have not completed our work on it yet.

Senator MONRONEY. A lot of these were reservations because of fighter climb-outs, were they not, and now you are dividing the climb-out corridors, as you mentioned in the South Carolina case, and others, to where ordinary traffic can pass overhead and the fighters will have corridors to climb out?

Mr. CARMODY. That is correct, sir. That is one large part of it.

Another is that the immediate offshore areas within the 3-mile limit are ideally situated for certain types of gunnery and bombing, and as a result much of the shoreline has been taken up by those two.

We are also working on relocation of these activities.

Senator MONRONEY. Thank you, sir.

Mr. THOMAS. Our study regarding special use airspace is continuing. At this time I can state that we have under study 140 additional restricted areas, and hope to release much additional airspace for general public use.

One of the most critical and difficult airspace problems currently under consideration by the agency involves the so-called southern California complex restricted area. This restricted airspace covers a large part of southern California and is utilized by the Air Force, the Army, and Navy. In addition, it is utilized for flight test operations conducted by various aircraft manufacturers.

Our Bureau of Research and Development first performed an intensive operational analysis of the situation. The Administrator then directed a team of highly qualified operational and technical specialists to spend 30 days in the area, validating the operations analysis and developing positive recommendations for action to provide both immediate and longer range solutions.

In view of the many variables involved, a public hearing was held on October 27, 1959, at Riverside, Calif., in order that the military departments and the public could be afforded an opportunity to express their views orally. We are now studying the record of the hear-

ing and other information available to us, with a view toward modifying this complex of restricted airspace in such a way as to satisfy the demands of safety and yet meet the needs of both the general public and the military services.

In closing, a word about our future airspace program may be in order. We intend to require an annual report showing the actual utilization of all restricted airspace. We are also reviewing the airspace reservations, prohibited areas, which were established by Presidential Executive order.

In the continental United States there are nine such airspace reservations covering a total of 5,136 square miles. Moreover, we intend to review the offshore warning areas. There are approximately 75 such areas covering about 390,000 square miles. This will be done, as in other cases, in close coordination with the Department of Defense and various aviation interests.

Senator MONRONEY. Thank you very much, Mr. Thomas.

General Quesada, you remember we had a great deal of conversation, even a very good fight, on the Senate floor, in the passage of the Federal Aviation Act over the committee's desire to give you greater power in vetoing the location of military installations, that they would first have to be cleared under the original bill by you. This was highly objectionable to the military to have a civilian veto hanging over them.

But I notice nothing in your statement that indicates you had any conflict or difficulty with the law as it was finally passed, which was in a compromise of the two viewpoints.

Mr. QUESADA. No. This has worked out quite well, Senator. The Military Establishment does give us prior notice on future installations, it gives us prior notice on any major modification of an existing aviation facility, and we have the opportunity of commenting and sometibes we comment in an adverse manner.

I think that Mr. Thomas might give you some specific examples of our comment, and their reaction.

Mr. THOMAS. I don't know, sir, that we have actually resolved some. Principally, we got very much concerned with the location of the airbases and the direction or alinement of the runways as they may affect other traffic. In the past we ran into this situation when the concrete had been poured and contracts let. Little could be done about it. As long as we can get it in the paper stage I think we can work it out.

Senator MONRONEY. In other words, there was no machinery to submit military plans until perhaps the land had been bought and the construction of the airport had been started. Now, you are advised before these things take hold and money has been spent, so that your comments can be effective, at least to warning the military that there is a conflict in their proposed location; is that right?

Mr. QUESADA. Until this provision was contained in the act, and until the act provided that this prior notice be submitted, there was no way that this conflict could be focused on. There was unilateral action on either part—the military or civil—that was not aften helpful to them and often not helpful to the civil users.

At the present time, by virtue of this provision in the act, these conflicts are often, and we hope always resolved prior to the time they become restrictive to either party.

Senator MONRONEY. You have a general rule, do you not, or an ideal situation that busy airports should not be located closer than 16 or 17 miles from each other. Is that so you can separate the traffic patterns?

Mr. THOMAS. Yes, sir; except this is not a precise rule. It depends largely on the orientation of the runways and the facilities. But as a general guideline, of course looking at it, we would say about 16 miles.

Senator MONRONEY. This, of course, is something you try to carry out now in the event of a new military area selection?

Mr. THOMAS. Yes, sir; that is correct. We are more concerned about the precise configuration of the runways as to how they might have their departure and arrival patterns, and if necessary we will put this in simulation in Atlantic City to see how it might work. In some cases an airbase 30 miles away might be quite damaging to the traffic flow at some other airport, and we cannot have one less than 16 miles apart.

Mr. QUESADA. We try to be reasonably intelligent in the solution of this problem, and that is enhanced by our increased simulation facilities at Atlantic City. We can subject to test actual conditions that we might anticipate.

Senator MONRONEY. The development of missiles, particularly our long-range missiles, has not posed any very serious problem, has it, to air navigation up to this point?

Mr. THOMAS. Yes, sir; it has posed some. But we are working, I think, the solution out very well. One of the problems with missiles is not so much the launching site; we can work this out quite easily. Our major problem is with the dropping of the stages; the impact site and launching site are not too difficult.

However, I think we have worked out all those problems fairly successfully.

Senator MONRONEY. As I understand it, most of our ICBM and even intermediate range are tested at Cape Canaveral and at Vandenberg Base, both of which have overwater rangefinders. Is that correct?

Mr. THOMAS. That is correct. But, of course, we have a good deal of overwater air traffic as well. This is the solution. Vandenberg and Point Arguello are ideally situated geographically for the north-south orbits. It is practically all over water as well as the westery orbits. Canaveral is very well situated except we do have air traffic going over both the Pacific and Atlantic. That is where we have to work from.

Senator MONRONEY. You know the course generally so you can detour the traffic around the course of the missiles with a fair degree of accuracy. You don't have too much loss of airspace.

Mr. THOMAS. No. We know precisely what their activities are, and we work with them very closely.

Senator MONRONEY. In the event of dispersal as is being talked of, and inland ICBM bases, these will not be used generally for test firings. The test firings will still go to the ocean ranges, will they not?

Mr. THOMAS. Sir, if we are concerned about the actual operational bases which will be used this gives us very little airspace problem. It is the testing and training, and these are confined to restricted areas.

Senator MONRONEY. So far as we know there will be very little testing of the facility once installed, if it is, as you say, to be fired only occasionally.

Mr. THOMAS. There will be no testing. The testing and training will be done at bases suitable for such.

Mr. QUESADA. In summary, what you said is absolutely true. The operational bases provide little difficulty and impose little damage, if any at all, on airspace utilization. I think all of us would agree that in the event of danger they must be permitted to fire, and we would all have to take our risk from that result.

This is one of the penalties that is essential to a strong national defense structure. I don't think there is anybody unwilling to assume it.

Senator MONRONEY. There won't be much private flying on that day, anyway, which we hope never comes.

Senator Engle, I am sure you have some questions?

Senator ENGLE. What are the various designations of restricted or prohibited airspace? I observe you use the words "restricted" and "prohibitive" as if they were identical. Is that right?

Mr. THOMAS. No, sir. There are two recognized designations, or more than two—in the continental United States—that are restricted. This means that they are restricted to a certain kind of activity, to a certain group of people, and may be restricted only by hours or by height or to the military or against the military.

This does not mean that aircraft cannot fly through them. Prohibited areas, on the other hand, simply mean that; that aircraft cannot fly through the area, such as the one here over the Capitol and the White House, or over some of the Atomic Energy Commission facilities.

Senator ENGLE. We have a prohibited area here over the Capitol?

Mr. THOMAS. This is a prohibited area.

Senator ENGLE. That goes as high as the moon?

Mr. THOMAS. Yes, sir.

Senator ENGLE. You also have one over the Naval Observatory out here?

Mr. THOMAS. Yes, sir.

Senator ENGLE. Why do you have that?

Mr. THOMAS. Why do we have it?

Senator ENGLE. Yes.

Mr. THOMAS. The reason for that particular prohibited area, and we have looked at this from time to time, is that a great volume of traffic would completely interfere with the work that they are doing out there, such as on their time measurement and observations. This does not give us a great deal of difficulty in air traffic, although from the air traffic management viewpoint we would like to see it disappear.

However, we have felt they were justified, but we are looking at that one again.

Senator ENGLE. If a fellow were flying 30,000 feet over the Observatory that would be illegal?

Mr. THOMAS. He probably would.

Senator ENGLE. If a fellow were flying 30,000 feet he would still be illegal?

Mr. THOMAS. Yes, according to the rules.

Senator ENGLE. The same is true of the Capitol?

Mr. THOMAS. Yes, sir; that is correct.

Senator ENGLE. You regard that as a practical limitation?

Mr. THOMAS. Sir, as you know, they don't avoid just that little airspace. They do go quite a bit farther than just a little airspace marked on the map, and do try to avoid it.

Within the last 2 weeks a photographic flight, an official one, was authorized through the prohibited area at 8,000 feet. The Air Force did it, but they did come in and got a waiver to do so.

Senator ENGLE. I could understand that if it was done reasonably low. I would see how you could expect it to stay over some spots on the map, but if you get up to 30,000 feet, or more, I don't regard that as a very practical limitation.

On your "restricted," as distinguished from "prohibited," on your restricted how does the pilot know in what method it is restricted?

Mr. THOMAS. It is listed on virtually all charts, whether they are the sectional charts on what we call RF charts, whether for instrument or visual operations. The chart clearly points out the altitude or the hours and who is the controlling agency. It gives the activity that is going on in the restricted area, such as bombing, gunnery, or whatever it might be. It also designates the controlling agency to whom one may apply for permission to go through.

As we get into the joint use concept, we are trying to make this extremely simple—not to write a letter to a commanding officer some place, but to call the nearest FAA facility. If it is not in use we will approve penetration through the area. If it is in use, we will so advise and make it quite simple.

This is working out very well.

Senator ENGLE. What about this going down here at Quantico?

Mr. THOMAS. At the present time, the Washington Center, I believe, is the one that can authorize permission to go through there—that portion of it that is available.

Senator ENGLE. You have also what is called warning areas; don't you?

Mr. THOMAS. Yes, sir. The warning areas are off the shores of the United States, and they are established by the military services. They are neither prohibited nor restricted. I would not like to get into the law here dealing with off our shores, but in effect the military services say, "We are using these for these purposes. We are warning you that there is dive bombing, there is gunnery."

There is no law that I know of that would require a man to stay out of those. I think it would be quite prudent, however, to stay out of them and most people do avoid them.

Senator ENGLE. I understand the case to be this, then: If you have a prohibited area you have to stay out, such as over the Naval Observatory and over the Capitol.

Mr. THOMAS. That is correct.

Senator ENGLE. If you have a restricted area you can go thorugh it, but you have to be cleared to go through it.

Mr. THOMAS. Yes, sir; that is correct.

Senator ENGLE. And if you have a warning area, you go through that at your risk; is that right?

Mr. THOMAS. As a matter of practice, I don't think anyone goes through the warning area at their risk. That is regarded as a restricted area. There is no way we can establish a restricted area, but we can a warning area, we might well do so for the activities going on. But this is off the coastline.

Mr. QUESADA. I think one thing should be corrected, that under the term "restricted area" there are many circumstances when you can penetrate a restricted area without immediate prior permission; the point being that they might not be restricted between certain hours of the day. The restriction is limited during certain hours of the day. Under those circumstances you will have to have prior permission.

Senator ENGLE. I understand.

You referred to the situation in southern California. We have more airplanes and more pilots and more restricted areas than any other place in the Nation. How are you getting along with that?

Mr. THOMAS. This, as was stated, was an extremely complex matter for just the reasons that you cited, sir. I think it will probably be some little time before we do come out with a final solution. We are arranging to put in more facilities there as our studies call for, and we are trying to compress the restricted areas to the degree that we can, and at the same time serve the very many vital purposes going on at Edwards Air Force Base, and in this complex. But I don't think we have an immediate solution to it right now.

Would you like to add something?

Mr. CARMODY. Yes. We have a rule being developed which should be out shortly as a result of that hearing. At the time the hearing was held we had been advised that additional airspace would be required. During the course of the discussions prior to the hearing, and at the hearing, it developed that the earlier need for additional airspace in this area no longer existed.

In addition, we developed an agreement with the military to the extent that most of this area would be open to joint use. In other words, the scheduling of activities in these areas would be made known on an immediate basis through certain FAA facilities. The initial rule which would come up would cover these points, and as soon as we work out the procedures for making this information immediately available to the private pilot, this will be published.

This aspect of it we have completed.

There are later steps which will take a little bit longer, wherein there will be a more precise control of the activities and a more precise scheduling of the activities going on within those restricted areas. This will take additional facilities and equipment to accomplish.

Senator ENGLE. I would take it from your statement that the program is under foot to more or less segregate this aircraft. That is, you have the jets go 24,000 feet now; don't you?

Mr. CARMODY. Yes, sir.

Senator ENGLE. You say that you are going to establish another corridor which would be between 14,000, I take it, and 24,000; is that right?

Mr. CARMODY. This does not deal with this particular restricted airspace. That is our airway program, sir.

Senator ENGLE. I know that. I am referring to the statement that was just read.

Mr. CARMODY. Right.

Senator ENGLE. At the present time you have some special air traffic control areas between 17,000 and 23,000; is that right?

Mr. CARMODY. Yes, sir.

Senator ENGLE. You are going to drop that 3,000 feet so it would be from 14,000 to 24,000 feet; is that correct?

Mr. THOMAS. If I may, sir, we were talking about the structure of airspace. We now have some positive controlled airspace routes which we mentioned from coast to coast from 17,000 to 22,000, inclusive. We are planning an evaluation, really, of the existing capacity, where procedures are well known, around Indianapolis and Chicago, to see how much capacity is required for all the military flying in the upper strata above 24,000 feet. This evaluation will determine largely further implementation of positive control.

What we are trying to do is simplify the route structure outside of this. We would like not to have airways or routes if we have a better way of handling them. This is part of our objective.

So above 24,000 feet we do not have airways now. The present airway structure goes up to 24,000 feet and terminates. We are planning on terminating the present airway structure at 14,000 feet, and put in a simplified strata structure, we hope an improved structure, between 14,000 and 24,000 feet, for the longer range operations operating in those strata.

This is not positive control. It is not segregation. It is available for the turboprops or air carriers or anyone who wants to operate within that area.

I don't know if I made it clear, or not. Part of our actions are simplifying our airway structure. Another part of our action is providing more protection for the jet traffic at the high altitudes as rapidly as we can do so.

Senator ENGLE. How do you get these high performance aircraft up into these areas?

Mr. THOMAS. Sir, we have established what we call climb corridors at certain of the locations.

Senator ENGLE. I have seen those, but they are very limited.

Mr. THOMAS. Yes, sir; that is correct.

Senator ENGLE. Are you going to extend those so that a fellow flying a light airplane, for instance, wouldn't be tangling up with Boeing 707's going to altitude?

Mr. THOMAS. No, sir. These climb corridors are for the very high performance aircraft, the military aircraft. We are not providing for restricted airspace for the 707's to operate in. It operates within the common airspace.

What we are trying to do here is develop better traffic patterns, more radar and more services, but not restrict the 707's so no one else could operate through them.

Senator ENGLE. I am thinking about the Boeing 707 and the DC–8 and some others that come off the San Francisco Airport. If I am flying into the San Francisco Airport, I don't particularly care for flying through the wake of one of those outfits climbing out heading for New York because he would turn me over if I get in it.

How do you handle that kind of situation? He is right on the air route. In other words, he comes up and goes out and I am coming in. If I am within, say 3 minutes behind him I am liable to get turned over my my back. I don't like that.

Mr. THOMAS. We have two problems here, if I may. One is the vortex generated——

Senator ENGLE. I am familiar with all of that. That is just exactly what I am talking about. My point is eventually we are going to have to come to the point where we segregate some of this traffic to such an extent that no even a light plane will get turned over in the vortex of a 707, not to mention the Comanche which our chairman rides around in, and some others.

I made a complaint one time about the climb-out procedure that they had out, I think it was, at Moffett, in which those fellows were riding their turbo sticks right spank up through the regular air routes, think it was prior to the time of the FAA. The CAA stopped it. That hazard still exists.

If you go into an airport like San Francisco, or Los Angeles International, where you have everything coming off of there, what I am puzzled about is how you are going to get these jets up above 24,000 feet.

It is fine, also, to have an area, say, between 14,000 and 24,000 feet where the major long range prop-driven aircraft, or the turboprop, will operate. But the problem for the average busy pilot who flies for the most part below 14,000 feet is how he avoids the hazards of these fellows especially as they go out under full power.

Mr. THOMAS. Usually, sir, this is in the vicinity of an airport with an airport traffic control tower, and we are proposing a rule that will require two-way radio so that the control tower can effectively deal with the traffic problem and the separation problem between the various speeds and classes of aircraft.

One of our problems is now that there is no such requirement, and some of the pilots may or may not communicate with the control tower.

I think the answer to this problem is really better traffic patterns—everyone in communication with the control tower around these airports where this is going on, and the radar program we have got underway to give advisory information, rather than too many restrictions of additional corridors.

The expansion of the civilian jet or the military jet, and, in fact, the business jet, will be quite rapid, I think, from this point on. We are getting more and more jets into the air.

Senator MONRONEY. Haven't control tower operators been very alert to this? I know they run all kinds of B–52 approaches which would have about the same power as the 707 coming down to maybe 100 feet above the Oklahoma City airport and then pulling out. If there is any traffic like that in the area, the control tower will warn you when you first report in of such traffic and its direction.

Then as you come in for a landing they will stretch out your downwind leg and tell you to keep stretching it until you have plenty of separation.

Mr. QUESADA. I think another way to approach this, Mr. Chairman, and it goes somewhat to Senator Engle's point: It is our desire to have as few restrictions as possible. We would not like to have the restrictions that you appear to urge. We would like to have a facility and the means to permit traffic to flow with direction. If we have surveillance of the traffic we can then direct the traffic rather than restrict the traffic.

As our facilities increase, as we increase our ability to provide radar surveillance around these airports to which you refer—and in San

Francisco we have it, of course—we will then be able to have a freer flow of traffic under a control procedure rather than a restriction which is often necessitated by our lack of facilities.

Senator ENGLE. I prefer the other, too. But in the absence of it I would sure like to see climb-out corridors so at least know where they are and where to stay away from.

Thank you, Mr. Chairman.

Senator MONRONEY. They use those now on lots of military airports adjoining civil airports. They have established a large number of those which if you are within a certain geographic area of the ends of either runway, one end or the other, within 3,000 feet, you are out of the way of the approaching traffic.

Senator ENGLE. I am aware of that, and they have one of those out here at Andrews, but they haven't any when they are coming out. The approach corridors out of Andrews are not identified, and unless you know where they are you don't know what to stay away from. If you are flying a light airplane you don't want to be monkeying around the approach area on Andrews Field.

On the climb-out corridor, if you get out a few miles you can go under it and be safe. At least you know where not to be. That is important for a fellow flying the light and the business aircraft.

In the absence of a fellow starting out from here, say, going over to the coastal area, or to Rehoboth or that area, as many fellows do fly over there, you have to figure out how you are going to get over there without tangling up with those jets off of Andrews.

You can manage it all right when you take a look at that corridor because you fly far enough out to go under it. They have a little chart on there showing you just how high these jets are supposed to be at certain distances from the field. You know that if you clear them 2,000 or 3,000 feet you are in pretty good shape.

But that is not on the approach. That is why I was asking about it.

The same problem occurs, as far as business type flying is concerned, with the takeoff of 707's and whatnot, on these major airports.

Let me say that my experience with the airports of San Francisco and Los Angeles, both of which I have had a good deal of experience with, when they take a light plane off of there they clear you to go, they don't clear you right behind a 707. I have set out there at the end of the runway for 45 minutes, and I would rather sit than get turned over. They have those Boeings going off there, and those big airplanes. You get off eventually, but you get off safe. That is important.

I commend the good work they have done in that area, but I think eventually we are either going to have to come to some kind of a control system, such as General Quesada speaks of, where you have complete radar control, until these fellows get at an elevation, or we are going to have to have corridors where the rest of us know where they are and we will be good and clear there.

That is all. Thank you, Mr. Chairman.

Senator MONRONEY. Thank you, Senator.

Senator Thurmond?

Senator THURMOND. Are you rigidly enforcing all safety regulations, and are there any that you have in mind revising during the next year?

Mr. THOMAS. Sir, to the best of our ability we are enforcing all of them. There are some few that we have suggested here in the testimony this week, not only this morning but earlier, such as speed limits at lower altitudes, requiring two-way radios for entry into control zones at airports. I think this is a continuing field. You look at it all the time to see if it can be improved.

I don't know if the Administrator wants to add to that, or not.

Senator THURMOND. Do you make revisions the moment you feel they are advisable, or do you have a certain time to meet to discuss and enact new regulations?

Mr. THOMAS. Sir, that would depend on the urgency. The normal action that the agency takes, and which is provided for in the Administrative Procedure Act, its considered action, the public is given opportunity to comment. The action is taken in recognition of those comments or considerations. This takes some time, nigh to 120 days on the average, for a printed regulation.

If it appears to be a factor in the public safety and needs to be done forthwith, that we could do and do do as necessary.

Senator MONRONEY. Thank you very much, Senator Thurmond.

Thank you, General Quesada, for your appearance here, and our compliments for the continued effort you are making to release all possible airspace for public use and still guarantee that the military is not so confined that their missions are being handicapped.

I think this does take a very great diplomatic effort to get this done. Apparently it has been done with an amazing lack of friction which we certainly did not expect at the time the act was passed. It shows good will on the part both of the FAA and the Administrator and the staff and the military who are trying hard, apparently, to make this work, too.

Mr. QUESADA. They really are, Senator. If anybody had asked me a year ago if we would have progressed as far as we have now, both in terms of a reasonable procedure and in terms of having relinquished airspace specifically, I would have said that it couldn't be done. But the Military Establishment and other users clearly recognize, as did the Congress when they passed the act, that it was time that something specific be done to correct what was recognized by all to be an unsatisfactory situation.

I have no knowledge of anybody who really objects to the provisions of the act. I think the act in this area was sound in all of these areas.

Senator ENGLE. May I add at this point, Mr. Chairman, that I welcome and applaud the effort being made in southern California. I hope you keep at it. You certainly have the full cooperation of everybody out there in trying to untangle that situation to create the best possible conditions, and I know that even under the best possible circumstances we are going to have difficulties.

Mr. QUESADA. You are very kind to understand this, Senator Engle. You put your finger on a very important point, that southern California in particular—however, it is applying to northern California almost to the same degree—does have a high population of civil and military aircraft. This is compounded by the fact that there is a high concentration of aviation industry there.

So all of these factors have to be kept under consideration, and our desire is to balance the equities and defend the public.

You are very kind to understand it. We are grateful for the understanding.

Senator THURMOND. If there are too many military installations in California, and it is causing great congestion out there, I might be able to arrange to transfer some of those down South. This might tend to relieve the situation.

Senator MONRONEY. We are not congested in Oklahoma. They have been transferring Oklahoma installations to South Carolina.

Mr. QUESADA. Thank you very much, Mr. Chairman.

Senator MONRONEY. Thank you very much, General. You will not be required to be here the rest of the day. We will try to notify you in ample time so it will not conflict with other appearances I understand you are making before the House committee on the very vital importance of sufficient funds to properly implement our air system.

Mr. QUESADA. I hope you will give consideration to our desires to be there and fight for our appropriation, Senator.

Senator MONRONEY. Thank you very much for your statement.

Our next witness, Mr. Samuel Freeman, vice president, National Aviation Trades Association.

Mr. Freeman.

Mr. Freeman, we are happy to have you before the committee again. We appreciate the participation of the National Aviation Trades Association in giving the committee the benefit of your testimony on various matters affecting not only your members but the public and the airspace users as well.

## STATEMENT OF SAMUEL FREEMAN, VICE PRESIDENT—AIRSPACE, NATIONAL AVIATION TRADES ASSOCIATION; ACCOMPANIED BY ROBERT MONROE, EXECUTIVE DIRECTOR, NATIONAL AVIATION TRADES ASSOCIATION

Mr. FREEMAN. Thank you, sir. I would like to read a statement that we have here.

My name is Samuel Freeman. I am an airport operator, operating a privately owned commercial airport in the New York area. For the past 5 years I have been handling airspace matters for the National Aviation Trades Association. At the present time I hold the position of vice president for airspace in NATA, the nature of which has been described to you in prior testimony. I have also represented both AOPA and NATA on the New York Regional Airspace Subcommittee for the past several years until that committee was effectively put out of business last April by the FAA.

I appreciate this opportunity to appear before you to discuss the handling of airspace matters by the FAA, since they took it out of the hands of the old Air Coordinating Committee last spring and set up part 409, Regulations of the Administrator.

We were told by Charles Carmody of FAA at Las Vegas last April 15 that FAA planned to revamp the whole airspace setup. Shortly thereafter part 409 appeared. There followed an exchange of correspondence between NATA and Mr. Quesada, as well as other organizations, explaining why we did not like the new setup. This was climaxed by a meeting on Wednesday, June 24, attended by James Pyle, Dave Thomas, and others, at which FAA explained the new

rules and listened to comments. Following this meeting, attended by Robert Monroe, executive secretary of NATA, Mr. Monroe wrote the following letter dated June 27. Since this letter quite clearly outlined our feelings relative to the FAA method of operation I will read it at this point.

A copy of this letter was sent to you, sir, at the time it was written.

Senator MONRONEY. I would like to have you read it for the hearing.

Mr. FREEMAN. This is the letter of June 27:

In three previous letters we have asked, either individually or in concert with others, the Administrator to provide a procedure for resolving airspace matters in which we could reasonably participate; to date we have received no answer to any of these letters. However, last Wednesday, June 24, a meeting was called on 1½ days' notice to review a release explaining the new procedure under part 409. I was not satisfied with the results of that meeting and, therefore, will set forth again our problem.

On Wednesday afternoon a proposal for a military maneuver program involving airspace over the Chicago and Milwaukee areas was discussed. NATA was not invited to participate, nor were we even informed that such a proposal was under discussion. In any case, it was called with only a few hours' notice Yet NATA members are located in both of these areas and have a vital interest in the use of that airspace.

Since the institution of the procedures under part 409, NATA has received two mailings of notices of proposed rulemaking respecting airspace matters. The presentation of these cases in this rulemaking provides only the sketchiest idea of why the proposal is made. Nor are the items charted so that we can see the actual effect.

I draw your attention to Airspace Docket 59 New York, 3(a). This proposal appears to wipe out one small portion of a colored airway and leave the balance of the airway intact. If the proposal for elimination is based solely upon the traffic count, as presented in the proposal, we are forced to oppose such proposal since it is difficult for us to see the justification for chopping the middle, and a very small middle at that, out of a maor airway and depriving us of another method of getting from New York to Boston. Quite often we can obtain a clearance on a low-frequency airway when it is not possible on Victor Airways. Certainly there is no point in starting a man out on an airway and leaving him with no place to go but a dead end. The other cases in this series are similar.

While these two examples are cited only to point out the problem which you and me will run into with this new procedure as presently conducted, unless the time and place for examination, explanation, and modification, if necessary, of proposals is provided, the entire business will become hopelessly snarled. The aviation industry will be forced to return to Congress and ask for a modification of the Agency's powers. Experience has amply demonsrated that a just decision can't be made without proper foundation. A complete and proper foundation cannot be formulated by the Agency acting alone or depending upon written comment. The volume of cases and, consequently, the volume of letterwriting is enormous. Last year the Airspace Division and its regional subcommittees processed 3,780 cases.

This was in 1958.

This is the equivalent of 14 per day or 72 per week. Even allowing Mr. Carmody's estimate that probably only 40 percent of these cases need concern us, this is still 6 cases a day or 30 a week, which is a lot of letterwriting.

This volume makes it impossible for us to even remotely consider handling these cases at individual meetings concerned with the specific case only. We can't cope with it and I am quite sure that you cannot cope with it.

I am equally sure that Congress will not allow you the fantastic amount of money and personnel to cope with it on this sort of a basis.

This letter was written to the FAA, Mr. Dave Thomas.

I hope you recognize that these matters are vital to our operations. Every commercial air service operator holds a direct stake through his own operations or an indirect one through the operations of his customers in airspace. Experi-

ence has also demonstrated that we cannot entrust the statement of our requirements to others. This we must do ourselves since we are the only ones who know what they are. We must have a procedure with which we can cope. Our resources are limited in personnel, time, and money. We cannot afford to travel to random locations to participate in individual cases. We have tried to supply to these meetings in the past knowledgeable people who know our operations, our requirements, and when and where we can compromise our requirements.

In the regions, these people are volunteers. We cannot afford to carry them on a payroll, nor can we affard travel expenses for them. Yet their knowledge of local conditions and requirements is invaluable to both you and us.

Even under the previous procedures, the load of reading, research, and study was enormous. The addition of a letterwriting requirement makes it impossible, particularly when no meeting is provided in which pertinent facts without a proposal can be quickly reviewed, and the problem defined. If you are to succeed in your job of managing the airspace with equity and consideration for all then we must have regular meetings at fixed times and places at both regional and Washington levels. We must have published agenda with complete proposals, writeups, and charting. Both rulemaking and nonrulemaking cases should be processed. No proposal should be foreclosed from discussion. We must have reasonable time for review at both levels.

Finally, we must have the ability to establish our position in conference and have it become a matter of record and in rulemaking cases for the docket. These meetings should permit open attendance, discussion of the proposal, exchange of views with respect to it, and some sort of minutes for the record or docket. Let us not mistake shadow for substance. The meat of the difficulty with the Air Coordinating Committee was the closed membership, the voting privilege, and the requirement of unanimity for action.

ACC failed not because it was a committee but because it was a committee constituted with improper rules of procedure. We are not asking for these things which made ACC a failure. We are asking for those things which made it a success. What we are asking embraces no abridgment of the Administrator's rights and power. We recognize that in an emergency the Administrator will exercise his emergency powers, and justly so. At the same time, I see no impediment to the review of an emergency case on a normal agenda. It is possible we could develop a better solution to the problem in this case and, if the Administrator saw merit in the recommendation, he could adopt it. The decision in all cases is and remains his. This question we cannot and do not question. Nevertheless, no matter how legal your procedures, how marvelous your simulators, how productive your printing presses, how exquisitely automatic your computers, the entire process will be brought to a standstill by its failure to engage the human personality and serve its needs.

I hope the above will be helpful—it is meant in that spirit—to solve our airspace problems, and we must help you to solve yours. Please make it possible for us to do so.

ROBERT MONROE,
*Executive Director, NATA.*

Our specific major objection was based on the elimination of the regularly scheduled meetings and the substitution of informal meetings to be held on no fixed schedule, and with no power to act and at which we had no opportunity to orally state our position for the record, since no minutes were to be kept. Since all of our representatives attend the various regional meetings, and sometimes the Washington meeting, on a voluntary, unpaid basis, you can understand our concern in keeping the workload to a minimum.

Since then we have had the opportunity to see the new system in action. We have been deluged with proposals which have been poorly prepared as compared to the old ACC presentation.

Perhaps that word "poorly" isn't too well chosen. I have some examples here of these proposals which I would like to show you in a minute. They are harder to read. You have to sit and look at it longer to see what they are trying to do. They just are not printed mechanically in an easy reading form.

I have here the agenda and minutes for New York meeting No. 128. That is the old ACC system.

The cases are divided into convenient categories, and are accompanied by diagrams and charts, where necessary, and include both rulemaking as well as nonrulemaking cases by present definition.

I also have the minutes of New York meetings 125 and 126 as being typical examples of the results of these ACC regional meetings for your information. In contrast, the FAA proposals, examples, come drifting in on a day-by-day basis. They are not accompanied by any maps or charts. I understand from the FAA presentation that was just made that they will be at least in some cases accompanied by charts in the future. We got our first proposal the other day which was accompanied by a chart. This is certainly a step in the right direction.

They are poorly written and are not explained as to reasons except in extremely brief fashion. We are not able to get the big picture since we no longer get package deals involving a whole complex as we used to. Since there are no longer any meetings where the cases are presented on an orderly agenda basis, there is no opportunity for us to listen to proponents of any given proposal, which was frequently done in the past, enabling us to come to either a unanimous or a mutually agreeable solution. If we have objections to a proposal now, we must set them down in writing, many times without adequately knowing the background for the proposal.

It is true that we now have, in region I at least, regularly scheduled informal meetings. This is beter than nothing, but since no minutes are kept and no actions taken it is debatable how worthwhile the meetings actually are. I have attended only one to date, but can vouch for the fact that they are most certainly nowhere near as effective as the old ACC meetings. At the one I went to, the FAA chairman, who was the local regional FAA airspace utilization man, not the regional administrator who had formerly run the meetings, had the cases projected on a screen. One of his assistants gave a brief statement of the case. Asked, "Any questions?" "Next case." In that order. There were few questions, fewer comments. We all had the impression there was little point in making any. The six cases on the agenda were quickly disposed of. End of meeting.

Under the ACC system it used to take about 30 to 45 days from the time an item was acted on at a regional meeting for it to become an accomplished fact, assuming it went through the regional meeting without a split vote. Most cases did. Today it takes about three times as long.

In addition, many cases formerly processed through the airspace committees, now called the nonrulemaking cases, are acted on directly by FAA and we have no knowledge of them until they are in effect. The nonrulemaking cases constituted about 30 percent of the cases considered by the ACC meetings. They included such things as the esablishment and decommissioning of radio navigation aids and airport problems—things we feel we should certainly have an opportunity to comment on.

Under ACC, 3,780 cases were processed in 1958. As far as we are able to determine, to date there have been only 215 cases completed in the roughly 7 months the FAA system has been in operation.

I would like to call your attention to the FAA testimony. Their figure was 223. So we are pretty close together on that.

We would like very much to see FAA establish a system similar to the old ACC regional committees. It must be remembered that our general aviation airspace representatives act on a voluntary basis and receive no pay except perhaps partial travel pay for their time and efforts.

If I seem to stress this, we feel that it is very important. We see no other way to operate. Therefore it is important that airspace cases be presented in the simplest and most expeditious way and that we have the opportunity to state our position for the record at airspace meetings. The present system does not meet that test. Regional action meetings should be reinstated with industry members having an equal voice with Government participants.

On one point we must give credit to FAA, and that is in the vigorous way they have tackled the subject of restricted airspace. Due to their efforts, many formerly restricted areas have been rescinded, and others made smaller either in altitude or size. In addition, others have become joint-use areas with clearances available through the areas when they are not being used. This represents a definite improvement.

I would like to comment briefly on amendment 60–14, raising the floor of the airways, which has been mentioned in previous testimony. We feel that FAA has dragged its feet on this issue and hope that there will be no further delay in the implementation of the rule after July 1 of this year. We think this rule presents a definite step forward in increased safety. We are firmly committed to the policy of see and be seen. Raising the floor will enable us to get off airways when visibility lowers, and still keep a legal altitude over towns and built-up areas. In addition, and this is important and is not mentioned in the rule, it will free up additional airspace drastically needed for the visual flight of the increased numbers of rotary wing helicopters and autogiros and other slow flying craft that we feel sure will be with us in ever-increasing numbers in the near future. It will give them an area in which they can fly and know that they will have no chance of tangling with high-speed craft, including scheduled airlines. We would gladly advocate a speed limit in this uncontrolled airspace, and have in fact suggested this in the past.

It is our conclusion that over the objections of all segments of the aviation community FAA has instituted a system of airspace management and control less practical and efficient than that formerly in effect under the old ACC system. We would like to see a system similar to that formerly used, called by any name they choose, but incorporating regularly scheduled meetings of all user groups, which meetings would have the power to take definite action and not be just debating groups.

In addition, we feel that there must be legislated into the Federal Aviation Agency Act some right of review or appeal from FAA actions, which right, in the light of their actions during the past year of operations, can now be demonstrated to be needed. This is true not only of their actions in airspace matters, but also of some of their other rulemaking activities which will, I am sure, be coverd by other presentations.

Thank you again for this opportunity to appear.

Senator MONRONEY. Thank you very much, Mr. Freeman.

I think it should be clear from the record, however, that where you say you do not wish them to be just debating groups, that under the old Air Coordinating Committee general aviation had no vote whatever.

Mr. FREEMAN. That is true, sir. We were associate members, and we had no vote. However, we could make a statement for the record at those meetings, which was incorporated in the minutes. From my experience from working on this, these remarks were given considerable weight. It usually only became necessary to do this in the event of a controversial proposal which frequently resulted in this type of proposal, which again I might add didn't come up very often. But when it did this resulted frequently in a split vote of the regional meeting.

It was then important, when this came up for the Washington meeting, that these comments be considered as we know that they were, before final action was taken at the Washington ACC meeting.

Senator MONRONEY. It required, then, unanimous decisions to put anything into effect?

Mr. FREEMAN. Yes, sir. In other words, as I think I indicated, we are seriously not advocating a return to a system completely similar to the old ACC. It had its drawbacks. I think the main thing we are asking is a forum where we can state our case in a simple matter and have it incorporated in the minutes. I think the biggest advantage of the regional meetings from my experience was that you get a proposal, and we have some here for the proposal of airspace control zones, restricted areas, and so forth—you would go to these regional meetings, and the military, for instance, who might have made the proposal, would be there. They were able to explain what they wanted to you at that time, and you might go there with a great big chip on your shoulder, "Boy, this is horrible." When they got through explaining what they wanted, and why they needed it, you would say, "Sure, that sounds reasonable," and you would go along with it.

This was the big advantage which we have now lost in this system, because we get these written proposals with just a bare outline of a reason. Unless you can hear the guy explain why this is vital to release this balloon, or whatever, you don't get the full picture.

Senator MONRONEY. Would you amplify this lead sentence in your next to the last paragraph: "It is our conclusion that over the objections of all segments of the aviation community, FAA has instituted a system of airspace management and control less practical and efficient than formerly in effect under the old ACC system"?

What part is "all"?

Mr. FREEMAN. There was a letter, which I don't happen to have a copy of. This letter went out through the general aviation counsel and was signed by seven or eight of the general aviation organizations.

Again, I believe the Air Transport Association acted independently, but they also specifically had objected to the same thing.

Senator MONRONEY. I don't recall any objections excepting to the rule which you say should be put into effect immediately, and which they objected most strenuously to. That is the only thing you find yourself on complete opposite sides from the ATA on. I am trying to

recall any other objections. You perhaps heard the testimony. You might be able to help me.

Mr. FREEMAN. I believe Mr. Becker in his testimony to this committee indicated rather complete agreement, I think, with our requirement for a better meeting ground.

Senator MONRONEY. You are not saying that in your statement. You are saying that the whole system of control is less practical and efficient than that formerly in effect in the old ACC system. This was through probably unanimous consent. It finally wound up by the addition of tens of thousands of square miles almost each year in reserved or restricted airspace that the military was grabbing off. Now for the first time in my memory it is going in the opposite direction.

Mr. FREEMAN. Yes, sir. I believe we indicated that we were very happy with that.

Senator MONRONEY. When you increase the delaying procedures, which was one of the reasons that led to the passage of the FAA act, particularly in airspace, then the greatest delayer in the world is when you try to get the Air Force and the Army and the Navy and the Marine Corps and the Coast Guard altogether passing it up and down through the Pentagon and their various branches. They are entitled to the same consultation and the same delaying tactics, if you go back to that, that they had before, which resulted in I think a rather chaotic handling of the usable airspace, and a consistent shrinkage of it.

Mr. FREEMAN. I think what we are referring to specifically there was this meeting ground which we seem to have lost in this new system. I don't think we are in any way opposed to the power that was given to the FAA. It certainly has accomplished a good deal of good. We would, though—and this was the agreement I mentioned with the general aviation groups—and still do like to see a return to something similar to the old regional ACC meetings which were more than simply an informal meeting where you listen to a proposal, and there are no minutes or no really formal way to make yourself heard.

I think this is the big objection we have.

Senator MONRONEY. What I understand you want is (1) a clear identification of the proposed airspace rule and the response therefor; (2) an opportunity for minutes to be kept as to the response why the users of airspace are protesting or approving this proposed action; is that correct?

Mr. FREEMAN. Yes, sir.

Senator MONRONEY. Then you do want the finalization of this to rest in the Administrator and not in the unanimous consent mechanism in which about 10 people have votes, but in which general aviation has none, and neither have the airlines nor the airline pilots.

Mr. FREEMAN. Yes, sir; that is correct. In other words, we don't wish to take any power away from the FAA to make the final decision. We merely like to see a little better chance to have all segments state their case, or state their position.

Senator MONRONEY. A greater degree of consultation before the rule is finally formulated.

Mr. FREEMAN. Yes, sir.

Senator MONRONEY. Senator Engle.

Senator ENGLE. I observe, Mr. Freeman, you are an airport operator. Do you find this 700-foot rule you put in your statement a matter of real importance, that is, in raising the floor of airways?

Mr. FREEMAN. I believe in a couple of ways it is. You are flying along on airways and the visibility is coming down, and you want to get off airways, and I think this is not as important actually as the idea that if we had it, say, at 1,500 feet roughly, above the terrain, we would be able to have an area where we would know we could get off controlled airspace, and an area where your slow-flying things like this autogyro, and some of these others that are now going into reasonably mass production, will be able to operate.

Also I think with the advent of all of these TV towers which have gone up, the so-called 700-foot rule to the extent you do use it to get down to this level to get off airways if it starts to rain, or the ceiling is closing in, is pretty darned dangerous.

In other words, you are getting down into an area where not only if you flew over a town at 700 feet are you illegal by present rules, but also you have a serious danger of clobbering into a TV tower or the guy wires, which are even worse.

We think that since the airlines basically are flying higher and higher—that is, the bulk; airline traffic is going up—that it would be a fair proposal to raise the bottom and free up more uncontrolled airspace underneath for the light plane—that is, the slow planes and even some of the faster ones that want to get down there.

Senator ENGLE. In other words, the private flyer at the present time could come over a metropolitan area and be within the rule, that is, be under 700 feet under the conditions that are imposed—that is, the visibility less than a few miles, and more than 1 mile—and at the same time be in violation of other CAB regulations because he couldn't get that airplane out of the metropolitan area if he had an engine failure.

Mr. FREEMAN. Yes, sir. Also, I believe he should be over built-up areas or cities, a thousand feet above the buildings. So he is legal in one way but illegal in another.

Senator ENGLE. In any case, he couldn't get up to a thousand feet and be legal, and in any case he is supposed to be a thousand feet or higher so that he can get out; isn't that correct?

Mr. FREEMAN. Yes, sir.

Senator ENGLE. I certainly agree with you. I hope that the FAA takes the action on it. Thank you very much.

Mr. FREEMAN. May I call your attention, sir, to page 49 of the ATA's testimony. This one sentence:

> We do recommend that the FAA give favorable consideration to reinstituting the time of meetings which have proved so valuable in the past.

This was specifically what we also were referring to.

Senator MONRONEY. Not to the method of decisionmaking or interminable delays by unanimous consent.

Mr. FREEMAN. Yes, sir.

Senator MONRONEY. Thank you very much. We appreciate your testimony, Mr. Freeman.

The committee will stand in recess until 2 o'clock this afternoon, at which time we would like Mr. Hartranft to testify, followed by Mr. William K. Lawton of the Business Executive Aircraft.

It is the hope of the committee that we may be able to conclude this phase of the hearings today, if possible, and probably recess for the most of next week since the FAA will be engaged in appropriation hearings in the House. Unless further notice is made that will be the intention of the subcommittee. The subcommittee will stand in recess until 2 o'clock.

(Whereupon, at 12 o'clock noon a recess was taken until 2 p.m. of the same day.)

AFTERNOON SESSION

Senator MONRONEY. The Subcommittee on Aviation will resume its hearing.

We are honored today to have back before us Mr. Hartranft, executive president of the Aircraft Owners & Pilots Association, accompanied by Mr. Victor Kayne and Mr. Karant and Mr. Armstrong.

You have a prepared statement, I believe; if you will proceed with the reading of that.

Would you like to complete your statement before interrogation?

## STATEMENT OF JOSEPH B. HARTRANFT, PRESIDENT, AIRCRAFT OWNERS & PILOTS ASSOCIATION; ACCOMPANIED BY VICTOR KAYNE, R. G. ARMSTRONG, AND MAX KARANT

Mr. HARTRANFT. It doesn't matter, Mr. Chairman. We again thank you for the privilege of appearing before your group. I have been put over in the copilot's seat here again today. Robert Armstrong, previously introduced to this committee, a 30-year naval aviator, formerly civil liaison officer for the Chief of Naval Operations, and our specialist on airspace matters, will present our direct testimony, Mr. Chairman. He has had a total of 9 years of specific airspace work on both sides of the fence, civilian and military. I will ask Admiral Armstrong if he will read the statement.

Senator MONRONEY. I will be happy to hear the statement, Admiral.

Mr. ARMSTRONG. Thank you, Mr. Chairman.

The Aircraft Owners & Pilots Association appreciates the invitation of this committee to appear before it with comments and recommendations pertaining to airspace management in 1959 under the Federal Aviation Agency.

Effective management of airspace, a natural resource of great importance for personal and business transportation and for the Nation's commerce, is a paramount responsibility of the Federal Aviation Agency. The Federal Aviation Act of 1958 conferred broad authority and powers on the Administrator to enable effective execution of this important function. The Administrator also is charged with the responsibility of giving full consideration to the requirements of national defense, commercial and general aviation, and to the public right of freedom of transit through the navigable airspace. The last phrase flows no doubt from the well-known "inalienable rights" which has been so important in the development of our Nation in freedom.

The FAA has given this fundamental precept real force and effect by rescinding some 17 of a total of 247 restricted areas existing within

the United States, during its first year. The program of review of restricted areas which the FAA has initiated and is carrying through with vigor is most praiseworthy.

This reduction of airspace reservations is of real importance to the efficient use of the airplane for all segments of civil aviation, including airline, business, and personal flying. The unwise designation of restricted airspace can and has stifled the free flow of vital traffic to many communities in the past.

An example of this is the case of the civil airport serving the cities of Beaufort and Morehead City in North Carolina. This is a civil airport on which Federal airport money was spent and which is located within a restricted airspare. In 1950 the Federal Government expended $6,600 of Federal airport aid money to improve the airport.

The civil authorities were required by the Federal Government to sign a sponsor's agreement guaranteeing to keep the airport open for public use for 20 years. This transaction was made at a time when the airport was legally sterile insofar as usable airspace was concerned. This airport has civil operations which are conducted at the pleasure of the commanding officer of the Cherry Point Marine Base. This area was the scene of one of the midair collisions between a military jet and a civil aircraft, as entered on the record of this hearing at an earlier session.

On September 16, 1959, AOPA wrote to the FAA recommending high priority for a review of this area with the view of eliminating or reducing the size of the restricted area so as to permit civil use of the public facilities in the area. As of today, the Beaufort-Morehead City airport is still completely blanketed by a restricted area. A copy of our letter is offered for the record.

Senator MONRONEY. That will be printed in the record at this point.

(The letter referred to is as follows:)

AIRCRAFT OWNERS & PILOTS ASSOCIATION,
*September 16, 1959.*

Mr. E. R. QUESADA,
*Administrator, Federal Aviation Agency,*
*Washington, D.C.*

DEAR MR. QUESADA: Reference is made to our telegram of September 1, 1959, concerning the midair collision that occurred in the vicinity of the Beaufort-Morehead City Airport on August 24.

Our review of the status of restricted area R–123 and its relation to the civil airport at Beaufort-Morehead City has revealed some information that would warrant urgent action by your office, if true.

Our investigation indicates that this civil airport was taken over by the Navy in 1941. Restricted area R–123 was designated in 1943. The airport was turned back to the civil authorities after the war, but no action was taken to modify restricted area R–123 so as to permit civil aircraft to use the airport. Civil aircraft have been using the airport under individual agreements negotiated with the commanding officer of the Cherry Point Marine facility. These agreements are made at the pleasure and discretion of the military authorities since no legal provision was made for operation of civil aircraft within this restricted area. In 1950 the Federal Government expended $6,600 of Federal airport aid money to improve the airport. The civil authorities were required by the Federal Government to sign a sponsor's agreement guaranteeing to keep the airport open for public use for 20 years. This expenditure of Federal funds and sponsor's agreement were made at a time when this airport was legally sterile insofar as useable airspace was concerned. This situation has continued up to the present time, with no provision being made to permit civil traffic to use the public facilities in the area.

We urgently recommend that high priority be given to a review of this entire matter by your office with a view of elimination of restricted area R–123, or its

reduction to a reasonable size so as to permit civil use of public facilities in the Beaufort-Morehead City area. Your comments will be appreciated.

Cordially,

MAX KARANT, *Vice President.*

Our testimony of January 15 contained a number of safety recommendations that have been made to the Federal Aviation Agency, and its predecessor, with regard to management of the airspace. One of these recommended the establishment of a speed limit of 180 miles per hour for all aircraft operating in common use airspace below 2,000 feet.

This recommendation is based upon several considerations, including a lack of maneuvering space close to the ground. This situation is analogous to the ship slowing as it approaches the harbor, or the motor bus which slows from its highway speed as a build-up area is approached. The *Queen Mary*, because of size or speed capability, is not exempted from the rules of the road or the harbor regulations on speed.

Currently, the civil air regulations contain a speed limit of 180 miles per hour only for flight in high density zones. But it should be noted that military aircraft of high performance characteristics are specifically exempted from compliance. We do not understand this double standard of safety.

Our testimony gave an indication of the thousands of registered airports and other landing areas used by general aviation throughout the United States. Aircraft landing and taking off from this vast multitude of airports, plus the many different types of operations that are conducted at lower altitudes, need some form of protection against high-speed operations in the same airspace. The only logical and practical protection that can be afforded would be a simple rule of the road that would require moderate speed to give the pilots reasonable assurance that they can see and avoid other aircraft.

This rule is urgently needed in the interest of safety in this portion of the airspace. Please note that it would not be required in restricted areas set aside for military operations and in the restricted area climb corridors for high performance jet aircraft. Aircraft under radar control which could insure separation from other aircraft also could be exempted.

We know that this committee is aware of the flight characteristics of jet aircraft of the Century series, and other comparable types. The climb characteristics of such aircraft preclude any effective evasive action on the part of the pilot while making optimum climb. For this reason we have supported the climb corridor concept and the provision of radar protection for such operations.

As part of this concept of airspace management, communications are provided for civil aircraft by the controlling agency. This is to permit flight through these corridors when they are not in use by the jets. Some corridors have civil control and some military. We have experienced some difficulty with communications in those corridors controlled by military facilities, which has tended to deny use of this airspace even though it was not in use for jet climbout.

Senator MONRONEY. Could I ask you, Admiral, is this because they lack the communicating equipment at the military towers? I know you can't ordinarily communicate from a civilian airplane to a military

airport tower. You have to go through a weather station, or something * * *.

Mr. ARMSTRONG. Mr. Chairman, if I may, I would like to ask Mr. Karant to answer that. He has had specific and direct experience in the matter.

Mr. KARANT. Mr. Chairman, all these scrambled corridors that are referred to here are equipped with at least one civil frequency, and they have receivers on the ground to receive from our aircraft. They can answer us on regular civil frequencies.

Our problem with these is that the military apparently do not monitor these receivers nearly as well as the civil agency does—the FAA does. We call repeatedly—I believe I mentioned in here several days ago in answer to a question from Senator Engle—I have been practicing on the Andrews jet corridor for a long time. I guess out of 100 tries I have gotten 5 answers.

But they do have the equipment for civil communications.

Senator MONRONEY. Once in a while we set up a landing in a small plane at a military airport, and you cannot get through. Even though the commanding officer may be waiting at the gate to welcome you, you can't get through their radio. The only way we have been able to do it is contact an FAA weather communications center and ask them to relay on the military frequency our communications. If they have got them, they ought to keep them at least turned on, I would think.

Mr. KARANT. Under normal conditions in a military tower—not this jet climb corridor—the situation would probably be that they only are listening or presumably are listening on 121.5, which is the international emergency frequency.

But they don't answer on that as often as they should. That is probably what your pilot would have to do, is try to call them on 121.5. That is when they would not answer because they normally operate towers on military frequencies only, unless it is a joint-use airport.

Mr. ARMSTRONG. That matter has been brought to the attention of the FAA, but little improvement has been obtained.

The Federal Aviation Agency has been working on a program aimed at the segregation of airspace so as to provide training areas for military jet operations such as acrobatics, bombing, and gunnery practice. This program was instituted by the old CAA and has resulted in establishment of a number of areas of this nature. AOPA participated in some discussions of specific locations and has recommended adoption of a national policy to insure uniformity throughout the country.

This safety recommendation was made in our letter of November 3, 1958, to the CAA Assistant Administrator for Airspace in connection with the Webb-Reese Air Force operations. It contains supporting data for our national position and covers some of the points raised in your discussion, Mr. Chairman, on January 26, with regard to segregation of the airspace. For that reason we submit a copy of that letter for the record.

Senator MONRONEY. Thank you very much. It will be printed at this point in the record.

(The letter referred to is as follows:)

AIRCRAFT OWNERS & PILOTS ASSOCIATION,
*November 3, 1958.*

Mr. H. P. NOGGLE,
*Assistant Administrator for Airspace,*
*Civil Aeronautics Administration, Washington, D.C.*

DEAR MR. NOGGLE: The enclosed statement reflects the position of the Aircraft Owners & Pilots Association with regard to the Webb-Reese training areas. It also may be applied to other similar cases which may arise in the future.

Cordially yours,

MAX KARANT, *Vice President.*

AOPA STATEMENT CONCERNING JET TRAINING AREAS FOR WEBB AND REESE AIR FORCE BASES

The Aircraft Owners & Pilots Association, on behalf of its 73,000 members, has a vital interest in the restricted areas requested for jet training aircraft based at Webb and Reese Air Force bases.

The present active civil aviation fleet numbers approximately 67,000 aircraft, of which some 5,400 are based in Texas alone. The general aviation fleet has 6,800 active multiengine aircraft, of which 689 are based in Texas. This may be compared to the total U.S. scheduled air carrier fleet of 1,841 aircraft.

Still using Texas as an example, we find that 699 of the more than 7,000 airports and landing fields registered with the CAA are located in that State. This does not include some private ranch and farm strips that are not listed with CAA.

Unfortunately, the CAA does not have adequate information concerning the volume and nature of the civil traffic in the areas that would be affected by the Air Force proposal in this case. The air carrier schedules are a matter of public record, however, all indications are that scheduled airline traffic contributes only a small percentage of the traffic generated by civil aviation in these areas. We do have figures available for general aviation from some of the CAA towers and communications stations in and around the area, but these encompass only those aircraft which came in contact with the CAA facilities at a handful of airports. These figures for calendar year 1957 are:

*General aviation itinerant operations—control towers*

| | | | |
|---|---|---|---|
| Abilene | 37,092 | San Angelo | 19,905 |
| Amarillo | 21,715 | Wichita Falls | 24,062 |
| El Paso | 60,185 | Albuquerque | 36,827 |
| Lubbock | 44,229 | | |
| Midland | 35,526 | Total | 279,541 |

*General aviation aircraft contacted—communications stations*

| | | | |
|---|---|---|---|
| Amarillo | 14,353 | Carlsbad | 6,003 |
| El Paso | 15,653 | Hobbs | 10,163 |
| Junction | 6,568 | Roswell | 13,288 |
| Salt Flat | 8,814 | Abilene | 58,477 |
| Wichita Falls | 14,663 | Lubbock | [1] 29,376 |
| Wink | 7,563 | Midland | [1] 60,069 |
| Albuquerque | 23,135 | San Angelo | [1] 45,343 |

[1] Combined station-tower figures include allover aircraft, both civil and military.

The national magnitude of general aviation flying activity was the subject of a report released earlier this month by the CAA. In 1957, the CAA reports, generally aviation aircraft flew 10,900,000 hours and traveled 1,400 million miles. By comparison, the airlines on scheduled domestic flights flew 3,600,000 hours for a total of 785 million miles. The business segment of general aviation alone flew 4,900,000 hours in 1957, or more than 1 million hours more than the airlines. Business and commercial aviation aircraft serve many locations that do not have scheduled airline service and perform a wide variety of functions

in our industrial, business, and agricultural fields that are vital to the national defense and are an essential part of the national economy.

The foregoing facts and figures amply demonstrate the importance of freedom of transit in the airspace as an essential concept of our national air policy. Coupled with this, we must have maximum utilization of the airspace by all segments of aviation, both military and civil, with minimum restriction to any class of user.

AOPA is fully aware of the needs of a strong military air arm in our national defense plan and of the extensive training that is needed to produce competent crews for our military aircraft. We also have recognized that certain military air training activities must be segregated from normal aircraft operations when such training activities preclude normal observation and avoidance of other traffic. In view of this, AOPA recommends the following national policy:

AOPA Policy on Segregation of Military Air Training Operations

1. Military air operations that constitute a hazard to civil air traffic should be segregated, or suitable safeguards should be provided to protect civil traffic from such operations. There should be minimum restriction of civil aviation compatible with maximum utilization of the airspace.

2. Military training activities of the various Armed Forces should jointly utilize common training areas insofar as possible.

3. Restricted areas should be limited in size by specific requirements which are documented and justified. Periodic review of all areas should be made and areas released back to public use when no longer needed.

4. Restricted areas for jet training of a nongunnery nature should have a floor of not less than 15,000 feet m.s.l.

(*a*) The controlling agency for such areas must have communications available on civil frequencies appropriate for general aviation.

(*b*) Provision must be made for IFR and controlled VFR traffic to transit these areas, traffic permitting.

5. Provision should be made to permit all traffic to utilize restricted areas of all types when not in actual use by the military.

6. Corridors crossing civil airways below 15,000 feet m.s.l. for high volume military traffic should be kept to an absolute minimum. Every effort should be made to locate training areas so as to preclude high volume airway crossings at low altitudes.

7. Jet penetration patterns outside the confines of restricted areas should not be established unless adequate radar surveillance is available and functioning to assure that airspace involved in the penetration is entirely clear of all itinerant aircraft.

The floor of 15,000 feet m.s.l. recommended for these training areas would mean that IFR traffic could be cleared no higher than 14,000 feet m.s.l. under them and VFR traffic could go no higher than 14,500. As a practical matter, most general aviation traffic today does not operate above 13,500 except for short periods to overfly weather. While a large number of the general aviation fleet are equipped with engines that can operate at higher altitudes, a relatively smaller number of the aircraft are pressurized or have oxygen equipment on board.

The 15,000 M. S. L. floor has a further significance in that it coincides with the CAA announced plan to lower the floor of the continental control area to that level and then, at a later date, control all traffic above that level. This appears to be a practical dividing line between pressurized and nonpressurized aircraft. By the same token, it also represents a practical dividing line that would more or less separate the aircraft with complete deluxe equipment and a professional pilot from the lesser equipped aircraft with the less skilled pilot. The inherent characteristics of jet engine operation dictate the use of the higher altitudes in the interest of maximum performance and fuel economy. Thus it would appear that the use of a 15,000-M. S. L. floor for nongunnery jet training activities should impose no undue hardship on the military. It would, furthermore, establish a single altitude in common with the CAA plan for the continental control area, thereby enhancing pilot observance of both types of areas. For example, a pilot flying cross country below 15,000 would be secure in the

knowledge that his flight was clear of both types of areas as long as he remained below that altitude. To do otherwise than establish these area floors at 15,000 will lead to a national hodgepodge of different floors and create unacceptable confusion.

Further, the areas outside the confines of the existing civil airways and control areas should not be designated as controlled airspace. AOPA is unalterably opposed to the unnecessary imposition of the more stringent VFR minimums that would result from designating the airspace below the restricted areas as controlled airspace. Such airspace would not be used for the Air Force activities that have generated this case.

Mr. ARMSTRONG. Another problem area to all of aviation lies in the handling of the FAA of proposals for the erection of obstructions within the navigable airspace. It appears that the detached judicial attitude assumed by the CAA late in 1958 and continued by the FAA was considered to be necessary for the agency conducting the aviation hearings. This action has placed on the airspace users the major burden of determining the degree of hazard to aviation involved in proposals for tall structures.

On January 25, the FAA witness indicated that the FAA is the focal point for developing the aviation interest position with regard to tall towers and that the FAA then represents the aviation position before the Federal Communications Commission.

Records show that between March 1, 1959, and the end of November 1959, seven tall structures in excess of 1,000 feet were approved. Three of the seven towers were 1,500 feet or higher above the ground. There are now a total of 92 towers with a height of 1,000 feet or more above ground in the United States, either completed or under construction. There are an additional 20 applications pending for tall towers, of which 5 are for heights of 1,500 feet or better.

It is our recommendation that the Federal Aviation Agency assume a more vigorous role than being just a focal point in the matter of tall structures. The Agency should assume the major burden of determining the degree of aviation hazard inherent in such proposals, with the cooperation of the aviation industry, and should then insure that this position is forcefully presented to the FCC.

Senator MONRONEY. You heard the testimony this morning where they were now negotiating with the FCC so that they would be the unified voice of aviation in this matter. So apparently your recommendation is taking hold.

Mr. ARMSTRONG. I cannot too strongly point out the seriousness of this hazard in the airspace, sir.

Senator MONRONEY. I can agree with you because, while tall buildings may present some hazard, at least you know where to look for those. Fifteen miles out in the flat territory and you suddenly look up and you see a tower 500 feet in the air above you, it seems to be very dangerous, particularly when you are feeling your way in under rather hazy conditions. These are not very clearly marked, even though they do tag them with some day-glo and a few little signals or signs on the guy wires.

Mr. HARTRANFT. Mr. Chairman, I think you anticipated me there. A 1,500-tower has a tremendous complex of guy wires, and the lighting of the tower can be achieved and is, as a matter of fact, a required standard. There has been no technique yet developed which will properly mark guy wires. It is a real menacing cobweb covering a tremendous acreage in a tower that high. It is a real hazard.

Senator MONRONEY. It seems to me they are particularly dangerous to general aviation because they fly more in daytime than at night. These particular towers are far more visible at night.

Senator ENGLE. What experience do we have with reference to aircraft collisions with towers or guy wires of this type?

Mr. HARTRANFT. The experience so far on the vertical towers, because there have been so few of them, has fortunately been favorable. But I think we ought to knock wood when we say it, Senator.

Senator MONRONEY. As you say, you have now 92 towers and there are 20 more applications. In other words, the more you add to them the greater the hazard becomes; the greater the amount of general aviation aircraft in the air, the greater their exposure.

Are you satisfied with the markings on our air maps as to these highly dangerous projections above the terrain? It seems to me that sometimes they don't give enough significance to the real tall towers. They are marked as though they were a water tower, or something, of a lower nature, and many pilots, not expecting to find something 1,500 feet, are greatly surprised when they suddenly see one looming up ahead.

Mr. KARANT. Mr. Chairman, we had a problem with that particular thing for quite some time. There is a method that is used to designate these extrahazardous obstructions like those towers. It is used on the aeronautical charts. The problem with that is that the aeronautical charts are revised every 6 months at the very fastest, and a number of them are revised only once a year.

At the rate these towers go up, you might as well rely on about a year going by before they appear on the charts. These obstructions, especially these tall, 1,500-foot towers, are so frightening that the word gets around just out of sheer fright among pilots.

I don't suppose any pilot flies across country very long and doesn't know about the one out near Dayton, for example. He may never go near Dayton, but he sure knows there is a whopper out there.

The FAA has a system of notices to airmen, which unfortunately few pilots have access to. The Airman's Guide does post these once in a while, but the most effective place would be on the charts. There is a great lag in it appearing on those charts.

Senator MONRONEY. Would it be any good for a special notice to be put up in airport offices or general aviation fixed base operators, showing danger areas—a map of the United States showing where these towers of a thousand feet or 500 feet are?

Mr. KARANT. This is done in some cases by some enterprising airport operators. The Government itself confines its efforts to issuing notices to airmen through their normal channels. About the only practical way that you could warn all pilots around the country in a reasonably short length of time would be, let's say, publications mailed out, mass production like we might have to do it at considerable expense. Or to have a different schedule for the aeronautical charts—in other words, revise them more frequently.

That is about the only way you could get that word out.

Senator MONRONEY. As I understand it, this is a particular hazard to general aviation because I think the CAA or FAA wisely has not allowed this penetration into the regular flight path. You will find on a radio beam you are not apt to be flying among these. They put

them on off a quadrant that is removed. But those not flying on airways, trying to stay off airways, would probably be flying right in that direction.

Mr. KARANT. Those pilots that are flying on airways, or off—if they are flying VFR they may fly at any reasonable altitude they choose. If an airliner airplane, for example, chooses to fly FVR, he will have cause to worry about the presence of those towers just as much as anyone else. Those towers do appear on airways. When they do, in order to protect instrument flying they raise the minimum instrument altitude above the height of that tower. But if the airplane is flying VFR, everybody has to watch out.

Senator MONRONEY. You may proceed.

Mr. ARMSTRONG. Several statements have been made before this committee with regard to the FAA delay in raising the control area floors as specified in CAR Amendment 60–14. Some clarification appears to be in order. The FAA witness on air traffic control stated that the purpose of this amendment was—

> to provide additional uncontrolled airspace wherein aircraft might operate with flight visibility as low as 1 mile without meeting the requirements set forth for instrument flight.

However, the Civil Aeronautics Board official release promulgating this rule states—

> The objective of the proposals was to redefine the dimensions of control area so as to provide a more reasonable balance of the airspace requirements of both the IFR and VFR users of the airspace.

The FAA witness further stated that the amendment would permit and encourage flight in poor visibility conditions below the tops of radio and TV towers, or even below the tops of tall buildings. They failed to indicate that the present floor of 700 feet compresses such operations even farther down among these obstructions and that this operation has been perfectly legal for many years. They inferred that a higher floor would derogate safety of these operations, whereas it actually would increase safety.

If the new floor of 1,500 feet is considered unsafe, then the present floor of 700 feet should be extremely unsafe by their own reasoning. The very fact that this regulation has stood the test of time refutes their stand. If they feel so strongly that it presents a hazard, then it would be logical to assume that the Administrator would have taken prompt action many months ago to raise the floors to a level considered safe by their standards.

The Civil Aeronautics Board conducted extensive deliberations on the proposals to raise the control area floors before promulgating this amendment. They obtained and heard comments from all segments of aviation, including opposition from the old CAA. The CAB further noted, in the preamble to this rule, that the Administrator indicated that 1 year was required to implement the amendment. This period of 1 year was granted by the CAB.

Notwithstanding the extensive deliberations that preceded adoption of the rule, the FAA now has stated that they are convinced that it does not meet the stated needs of general aviation for free airspace. Since the rule permits the Administrator to establish the floor at 1,500 feet or higher they could have implemented the rule at any time during the past year at a higher level which would more adequately

meet the needs of general aviation as they see them. This also would permit adjustment up to a sufficiently high level to take care of their theoretical point about the difference between obstructions and terrain.

Likewise, it also gives the Administrator the necessary latitude to raise the floor high enough to permit flight above obstructions, which seems to be another point that is worrying them, although the Civil Air Regulatoins have contained for many years basic rules for the avoidance of obstructions.

Our letters of November 20, 1959, which have been entered into the record, deal with specific details of this subject, and need not be repeated here. This rule would do much to enhance safety of operations—yet the FAA has delayed its implementation far beyond the reasonable time limit of 1 year.

In testimony both from AOPA and other airspace users, you have heard repeated references to the urgent need for a regular forum in which to deal with airspace matters. It is most important that this committee understand the reasons behind this unanimous requirement.

In the years prior to FAA, all of the many aviation groups met regularly to consider a multitude of airspace matters that inevitably must be considered almost continually. In 1958 a total of 3,780 cases, ranging from airport locations through planning of radio aids and erection of hazards to air navigation, were handled by these forums. The volume was comparable in previous years.

These cases were initially considered on a regional basis, where the people most affected made known their ideas on how a given proposal could best be implemented, and later were given a final checkout on the Washington level.

Since June of 1959, AOPA has received about 400 proposed rulemaking cases, of which only a little more than half have been implemented.

We agree wholeheartedly that the final authority in making any such decisions should rest entirely with the FAA. The authority belongs to the Administrator and he should act quickly, as soon as he has the facts. But he must have the facts, and he is not getting them now. Only occasionally and spasmodically do we meet with FAA these days on anything—and, remember, we used to meet weekly in Washington on airspace matters alone.

In the past, unsatisfactory proposals would have been solved in the course of ordinary roundtable conversations. It is true that these conversations and the regular meetings took some time. But they didn't take nearly the amount of time, nor cost all affected parties nearly so much, as does the present system. For it is now painfully clear, after this first year of high-speed no-consultation activity, that the FAA is seriously lacking in some fields of up-to-date knowledge and information about general aviation.

No one man or agency is thoroughly and completely competent to speak authoritatively for all the widely varied groups in the U.S. aviation complex. But when we all meet in a regular forum we quickly learn to understand and respect each other's problems and find practical solutions.

In conclusion, Mr. Chairman, we again thank you on behalf of our 80,000 members for the invitation to appear and present our views on this vital subject.

Senator MONRONEY. Thank you very much, Admiral Armstrong, for your statement.

Senator Engle, you are our specialist on private aircraft flying.

Senator ENGLE. I notice your statement, Admiral, with respect to climb corridors. What observation do you have to make, if any, on the desirability of having approach corridors?

Mr. ARMSTRONG. I couldn't hear your question.

Senator ENGLE. I say, what observation do you have, if any, to make on the advisability of approach corridors? You have talked about climb corridors like we have out here at Andrews, and other places. I previously expressed concern about getting these high performance aircraft down as well as up so the rest of us who fly around here will know where they are.

Mr. HARTRANFT. Senator, I think you will find many of these are actually being used for approach purposes as well. You have a valid point.

I also would like to say that the point you made earlier this morning regarding the channeling of high-performance aircraft such as the 707 in such areas is one that we would certainly endorse as giving protection to the pilots and occupants of the high-speed, high-performance aircraft, and giving protection to the others by giving that type of separation.

I think we would both be very happy with such an arrangement.

Senator ENGLE. This situation out at Andrews is a fair example of it. The regular approach procedures used into Andrews do not use a climb-out corridor. A fellow flying private aircraft, trying to figure out how he is going to keep out of the way of these high-performance airplanes not only wants to know where they are going, but where they are coming from.

The climb-out corridor in my opinion is a very good device. It is true that, as I think Mr. Karant testified, there has been trouble in communicating with the Andrews people with respect to crossing their corridor. But you can sure fly under it. In certain areas you can fly over it and be fairly safe.

It would occur to me that the other end of the barrel is open. As a consequence, if they put in climb corridors they ought to have descending corridors. At least we would know what to stay away from.

Mr. ARMSTRONG. Mr. Senator, if I may, I would like to express a couple of thoughts.

The climb corridors, as you undoubtedly realize, are based on the need for full power takeoffs for national defense.

Now, the climb corridors are fine for civil jets when they are needed, if they are needed. Right at this moment we feel that there should be adequate radar surveillance wherever these high-speed civil jets are operated for taking them both up and down and keeping them clear of other civil aircraft. At this time that probably is sufficient. Undoubtedly as the performance increases, and as we reach, perhaps, the supersonic, it may be that we will have to go definitely to that climb corridor for civil aircraft.

There is this one important difference between the takoff speed and requirement for using the performance in the military aircraft and the civil jet. They can slow down coming down. So can the military jet within limits.

Senator ENGLE. Has the AOPA given any thought to this matter of segregating the various types of air traffic? I notice you refer to segregation of airspace. I am thinking in terms of more carefully getting the high performance airplanes into areas where we don't operate. We know they are putting jets above 24,000 feet. They have some controlled airspace now between 17,000 and 22,000 feet. General Quesada said this morning they were going to lower that to 14,000 feet, which would mean that between 14,000 and 24,000 feet they would have a controlled airspace in which they operated the major big airplanes like the prop driven and the turboprops. Then above that would be the jets.

Do you have any comment to make on that kind of an arrangement whereby we would all kind of know where we ought to be, and except for getting up to those areas and getting down out of them, if we could kind of know where they were, at least we would know where we could fly without being run over by one of these outfits.

Mr. HARTRANFT. Yes, Mr. Senator, we have already entered in the record several proposals. I think Mr. Kayne can summarize those at this time.

Senator ENGLE. I unfortunately missed your testimony on air traffic control, but air traffic control and airspace sort of overlap.

Mr. KAYNE. That is quite correct, sir.

In this particular case, first, I want to clarify one point. The proposal as outlined by Mr. Thomas and General Quesada this morning, dealing with the 14,000 foot level. As I understood it, it was not the lowering of the positive control segment from 17,000 down to 14,000, but it was merely a matter of dividing line of a type of airway or a type of control so they would not require the positive control above the 14,000 foot level that they have under consideration.

Senator ENGLE. That is correct.

Mr. KAYNE. However, the statement that we entered in the record, which we did not read, basically touched on the Webb-Reese Air Force case about a year ago, involved national considerations of segregation of traffic. The case primarily was to establish this training area for Air Force nongunnery type training operations, but where they were acrobatic in nature and the pilot could not maintain any vigilance for other traffic, he had to be off in a space by himself.

This case was one of the first major cases of its kind in the country, and generated a considerable bit of interest. At a meeting in Fort Worth, I think there were 40 representatives there from the various civil aviation interests throughout the area. It was quite a testimonial to the interest that general aviation has and the stake that they have in the use of airspace.

We did recommend that a 15,000 foot dividing line be established. This, I think, goes back to Senator Monroney's remarks of several days ago. And that these general tarining operations be conducted above 15,000 feet. The airspace below that be free for normal operations.

This is the position we have advocated for a national policy, recognizing that you have some cases where you have to put restricted areas

right down to the ground for the type of operation that was contemplated, but in these other types you can make a segregation line of about 15,000 feet. This was the point that we referred to in our testimony primarily.

This would permit other aircraft to operate below that level more or less safe in the knowledge that they were not going to be clobbered by jets performing acrobatic training.

Senator ENGLE. There has been repeated reference to this new system put into effect by the FAA with respect to rule changes. As I gathered from the preceding testimony by Mr. Freeman, there was a good deal of unhappiness with that because there is not the kind of theories we used to have. Is that correct?

Mr. HARTRANFT. Yes, sir.

Senator ENGLE. They handed you an agenda with a description of what they wanted to do, and then if everybody sits around without knowing anything about it you are expected to pass on it; is that right?

Mr. HARTRANFT. Sometimes I don't even do that much, Senator Engle. Sometimes we just read about it after it is a fait accompli.

Senator ENGLE. Would you prefer to go back to the old system, which was Air Coordinating Committee?

Mr. HARTRANFT. No, we would not prefer to go back to a voting type of action by committee. I think that all industry has agreed upon that point.

Senator ENGLE. You have said here in your statement very clearly that you think the final decision ought to rest with FAA, and that the FAA ought to move and be able to move very rapidly in making these decisions. But you say that the failure of the present system is the failure to give to FAA the facts—that is, that FAA is making decisions rapidly, all right, but not always with what you regard as a proper factual basis.

How would you provide that for them?

Mr. HARTRANFT. I think precisely the same way it was done before, Senator Engle.

Senator ENGLE. But that is not a voting system.

Mr. HARTRANFT. No. The difficulty before was the fact that under an Executive order, the prerogatives of the Administrator had been delegated to the agency known as the Air Coordinating Committee. The decisions that were made had to be decisions which were a unanimous decision of the Government agencies who were the voting members, and there is where the delay and compromise and unsatisfactory performance came.

What we are suggesting here is that we still need the form for the purpose of bringing the interested parties together to present and to absorb and to digest what the proponents of the issues have to say, and to bring out the difficulties which might ensue and to try to resolve them, which is often done around the conference table.

The matter of final decision for those cases which are not so resolved, of course, is with the Administrator. The Administrator's job is very easy if the matter has been resolved by industry, and in the majority of those cases where fair men meet at a conference table, and each determine what their problems, needs, and requirements are, a high percentage of all these cases are agreed upon.

Both Admiral Armstrong and myself have been at this thing since the very beginning of the interdepartmental air traffic control board at the beginning of World War II, where this was the beginning of all this business of the airspace matter. I was the secretary of that board for 5 years. Admiral Armstrong was the Navy member of the New York subcommittee of that group. From that it evolved then into the ACC structure, and that is where we started to get into trouble because the authority then was a demonstrated authority between several agencies of Government trying to operate under an Executive order.

As Senator Monroney and other members of the committee have stated, and as all agencies agreed, that was a ponderous system which had to be stopped, and was stopped.

Now, we have gone to the other extreme. We have dried up all of the sources of information where we are no longer able to know what is proposed, why it is proposed, nor are the people who are proposing it able to determine what the problems are that would be created by these proposals.

So what we are asking now is a rollback, I think, of only one portion of this—the portion which gives the Administrator, who has the authority, a channel by which he can get the information and assimilate it, and to have the methodology of doing it in such a way that the industry can respond. That is the occasion for the regular meeting where we should have a prepared agenda, a business-like way of doing a very big volume of business, because these airspace matters are with us today. They are growing as we go into the complexities of new types of operational problems. We are losing ground now.

Senator ENGLE. But the FAA objects on the grounds that that takes too much time. Is that right?

Mr. HARTRANFT. I think we have indicated on the record that the present way of business is taking longer than the previous way.

Senator ENGLE. But they object on the ground it would take too much time.

Mr. HARTRANFT. We disagree with the facts.

Senator ENGLE. I know that, but I am trying to find out what they object to about it. They are not here, so I can't ask them, but I assume that is what their objection is. Do you know? I don't know whether you can state it.

Mr. HARTRANFT. I believe their feeling is it would assume some of the prerogatives of the Administrator.

Senator ENGLE. How would it, inasmuch as this group wouldn't have the right to vote? You are not in favor of going back to the voting system.

Mr. HARTRANFT. We quite agree. We disagree with them. We think they do not have a valid objection, Senator.

Senator ENGLE. What is necessary to roll back to the point where you could have hearings broad enough so that the proponents of propositions could be heard, and those who oppose propositions could be heard? That requires no additional law, does it?

Mr. ARMSTRONG. No, sir. There is no law required. The act was very, very well drawn. It gives the Administrator adequate authority to consult, and that is what he would be doing.

If I may add one pont, I think Mr. Monroney the other day made an excellent and perfectly logical point on one of the reasons why they possibly feel that they should not have meetings, and that is the rash of influence problems that we have read about a little while back could very well have influenced the FAA to say "Well, we are going to stay away from all that sort of thing. We are going to have no discussions with anybody except where somebody asks for it."

That, essentially, is the way it goes now.

Senator ENGLE. You mean a rash of influence problems?

Mr. ARMSTRONG. You may recall in the newspapers there was much influence peddling between Government agencies. I think they wanted to steer very clear of that, which was very wise. But I don't believe that this is influence peddling where we go and sit around a table and discuss a problem and seek a solution.

Mr. HARTRANFT. Senator, I think in the first part of our testimony regarding the overall safety matter, we covered this problem and indicated there was evidently a misinterpretation, perhaps, of the act on the part of the FAA officials who felt that in effect they were unable to properly conduct their activities and coordinate with us.

We offered a specific proposal and change of language in the act, which I think has been covered. Is it section 301? Section 301 of the act, I believe.

I believe you will find that in our initial testimony. This merely was a statement that there was nothing in the act intended to prevent this type of consultation. It would be a somewhat similar clause to that which has appeared in a number of congressional acts that says that "Nothing in this act shall prevent the proper operation of the Administrative Procedure Act."

For instance, a clarifying declaration.

Senator ENGLE. Yes, I recall that.

Now, with reference to this situation that you referred to on the restricted area, the Beaufort-Morehead City Airport.

Senator MONRONEY. Before you leave that line of questioning, is what you are suggesting that the same consultation and consideration that you have asked for in air safety rules and pilot certification and everything—qualifications—should be extended over to the airspace rulemaking as well? Before the rule is finalized or becomes set in concrete, you would like to have the advantage of a free flow of information from the parties concerned?

Mr. HARTRANFT. Yes. The volume of such considerations is of such nature that we believe those meetings should have some regular pattern, both with regard to frequency and format.

Senator MONRONEY. You have helped me out and maybe Senator Engle knows more about this. But give me an illustration of two or three rules that have been made that you would like to have more hearings on. What is the nature of them? I would like to know. I know the general pattern of rules on air safety and airmen, but I don't know what there is about this that involves or requires a high degree of consultation on airspace.

Mr. KARANT. Senator, I guess all of us at this table have spent interminable hours in the very meetings that are being discussed. It is just a matter of what area you are interested in now. In those air-

space meetings we will talk about anything having to do with the use of airspace, range, all the way from an airport, itself, on up through control zones, radio aids, all sorts of things.

Senator MONRONEY. This was under the old Air Coordinating Committee?

Mr. KARANT. That is right.

Take an airport where somebody proposes—the FAA proposes to put in a control zone. If you draw out the control zone at airport A on paper it might look relatively simple and straightforward. If they don't consult with anybody it shouldn't be very hard to put it through in record time.

But they have no way of knowing now, without talking to somebody, what effect this would have on, let's say, general aviation. The airline companies involved may have some thoughts on this matter because they live in that airspace all the time. The airline pilots, themselves may have some thoughts on this matter because they live in that airspace. The military agencies are affected by this decision in a different way.

The upshot of all of this is, I guess, we recognize that none of us are on a mission and we would sit around and look and we would look at control zone A at airport A. If there was any little thing that might have affected any one of these people in a way that none of the rest of us might have anticipated, that person who would be affected would just tell us.

In the vast majority of cases this was very quickly resolved with a very brief amount of conversation, and we go on about our ways.

Hundreds of thousands of cases involving all sorts of things of this kind—I just used the control zone as one typical case—were handled in this manner. The place where we run into trouble, you see, would be, with one Government agency involved in this thing, it would simply say "I vote no," and the whole thing would grind to a halt.

We objected to this just as strenuously as you gentlemen did. All we ask is a forum to discuss these in exactly the same way and get these problems solved.

Senator MONRONEY. Would it occur to you that there would be any danger, however, that with the properly recognized desirability of requiring advice from the general aviation use of the airspace, the minute it gets into the battle between the blue and the khaki and all that, when you get the thing into the Pentagon and then the aide to the admiral that represents the Navy on the Air Space Committee is told not to yield an inch for Navy, and the Air Force is told not to yield an inch for the Air Force, you get it into a matter of interservice rivalry and bickering which, believe me, was one of the worst things that ever happened to us in Air Space Management.

It is to break this battle of the services that this control which you endorse by the Administrator was instituted. When you formalize these hearings, or the consultation, again, you are going to have to have the military in there because they are going to say "Boys, we use half this airspace. The general has told me to appear here and my orders are that this is our position, and we are not going to budge."

Mr. HARTRANFT. Senator, two points: No. 1, you are absolutely correct. The military does have to sit there and they did sit there.

Again, they would only present their point of view. We would present ours. The Administrator would take the ball of wax and make the decision.

You have asked for specific cases. I have just consulted with my staff here. We will prepare for you a half dozen or so typical cases of this kind giving dates, places, and submit them for the record; if that would meet your satisfaction.

Senator MONRONEY. Pick out the ones you feel are representative, where you feel that more consultation by all branches is needed, because we have to bring that in. We can't say we are going to allow people we are sympathetic to, come in and not other people. I don't think there is an airport in the country that doesn't show that 30 percent of its landings and takeoffs are military.

Mr. KARANT. Senator, let me point out one other thing. In all the time we have worked in those committees, the only major point really was this voting process. All of us got to know each other pretty well, and I think all of us respected each other.

I assure you the airlines will take a long look at anything we brought up as a problem, and the military would take a long look at what the airlines brought up as a problem. In actual everyday practice it worked out very well. All of us understood each other, and what we didn't understand we could find out right there in that room. But when it came to that voting thing, that is where we ran into the bickering you are talking about. And in this case, as Mr. Hartranft has already said, the Administrator says, "I have the facts now. I will do what I think is best."

Mr. HARTRANFT. Let me emphasize that we are not advocating a system that would require delay here. We want one meeting to gather the facts, and the Administrator makes the decision. This is a whole lot shorter method than the way we are going about it now, where the facts aren't gathered, and a wrong decision is made, and then we have to go back and have a long tedious problem of untangling.

Senator MONRONEY. I gathered from the previous witness, though, that actually your people found it difficult to present the facts, since they are not on notice of what is on the agenda, or the problem that is presented requiring some new type of airspace ruling. Is that correct?

Mr. HARTRANFT. I think, as I understand Mr. Freeman's testimony, and I believe you are perhaps referring to him, he was indicating that on the few occasions when these meetings are called, they are called at various places throughout the United States. It makes it very difficult for organizations depending upon volunteer help to send their people. But if you have a regularly established meeting place, and agenda, a formalized agenda, A, B, a regular time and place for meeting, this simplifies the procedure, and the business goes very rapidly.

Senator MONRONEY. One thing I couldn't understand is, if they were willing to invite comment and consultation why they don't present what the picture is of the problem? I think he said later that they had corrected that to some degree, showing charts and effects of the rule change on the old rule, so that the people appearing then would have some notice before they arrived as to a study of what the additional problems it might create for that particular branch of aviation.

Mr. HARTRANFT. You have lost me on your point, Senator Monroney. I am sorry.

Senator MONRONEY. He said his witnesses couldn't appear even as these consultations or meetings, informal meetings, were held now because they weren't told what the proposed rule change was going to be in a clear manner.

I did think he later said that they have modified that and do present some charts, and things, to fully explain to general aviation and to others participating as to what the changes will be be.

Mr. HARTRANFT. Yes. I believe he indicated in the New York area that they had started to give a little more data on that. I think perhaps—Bob, do you have anything you want to add on that?

Mr. ARMSTRONG. If you please, gentlemen. Apparently the New York meetings, and perhaps some of the other regional meetings, are rather mechanical, in which an opportunity to see the proposal is given, and that is it. Apparently the people are not expected to really ask any serious questions, nor is there any attempt to give them full information on the basic reasons for a particular proposal.

That is the way I understood Mr. Freeman.

Senator MONRONEY. I think he also said they didn't know what the rule change would do. It was not presented in such a way that they could assess the ultimate damage, inconvenience, or hazards, or whatever it might be, and that he wanted it made more clear so that you would have something to comment on more appropriately than just to say "We are going to change the airspace rules over the New York City area."

Mr. HARTRANFT. We would agree with that, Senator. We think the meetings should be something more than merely informative meetings, where we go and are told what is to be done.

Senator MONRONEY. It is the same thing we talked about before, consultation.

Mr. HARTRANFT. It is.

Senator MONRONEY. And a challenge to the already fixed decision.

Excuse me, Senator Engle.

Senator ENGLE. This Beaufort-Morehead City Airport. How do they operate off of there now? If they are inside a restricted area they have to get a clearance every time they left, wouldn't they?

Mr. HARTRANFT. This is a real can of worms. As we understand the case—and it is not really clear on this collision that happened—there are no written formal agreements with respect to those who are privileged at the discretion of the commanding officer to operate, but, rather, some sort of an informal understanding that certain types of operations will be permitted under certain circumstances.

The point at issue, however, is we have a joint-use civil airport on which Federal funds have been expended right in the middle. I say joint-use airport. That is not correct. It is an airport on which the funds have been expended, and which we don't really have just use, but where all of the operations are subject to the will and discretion of the military commander.

I think we got into this originally when one of our members was involved in this midair collision. I think Mr. Kayne may have a little something to add to that.

Senator MONRONEY. Straighten me out. Is this the same airport? This is not an airport adjacent that the marines use and then the civilians use another airport? This is the same airport?

Mr. KAYNE. Mr. Chairman, this is a separate and distinct airport from the Cherry Point Marine Corps Base. This is a civil airport. It does have, I believe, during the summer season, air carrier operations. It has a number of civil aircraft based on the airport, but it is strictly a civil airport. It is encompassed entirely by the restricted area that was established for the Cherry Point Marine Corps Base early, I believe, in World War II.

Mr. HARTRANFT. Let us restate it so we all know what we are talking about.

We have here an airport with Federal funds, a civilian airport, surrounded by airspace. It cannot be gotten to without getting permission of the military commander. This can either be an implied blanket permission, or whatever manner in which it is operating, which isn't too clear at the moment.

What we are calling to the attention of the committee is that there is something wrong in a system where you have surrounded a civil airport of this kind by airspace which you can enter only at the discretion of the military commander.

Senator MONRONEY. Do you know the history of the airport? From what you say, however, there is $6,000 of Federal money being spent. That would be about $12,000 total. It wouldn't be much of an airport. Does this happen to be a former military airport that has been turned over for civilian use under conditions which the military still retain a degree of control?

Mr. HARTRANFT. There is a sponsor's assurance agreement. Mr. Kayne?

Mr. KAYNE. Mr. Chairman, actually the situation is just the reverse. This started out as a civilian airport prior to World War II. As you may recall, at the outbreak of hostilities the first immediate effect was to more or less stop all civilian operations, general aviation type, along the coastal area on the east coast. As the Cherry Point Marine Corps base came into being, the civil airport was taken over by the Navy Department and used then as an outlying field or an auxiliary field for military traffic. Shortly after the end of the war the field was then turned back to the civil authorities. It was theirs in the first place, and the Navy just had it during the war. They turned it back to the civil authorities.

It was following this that the civil authorities then made some improvements to the airport to enhance the nature of civil operations. It was at this point that the Federal aid money was spent. But, nevertheless, all during this period from the time the Navy originally took the field over and they established restricted area from there on, when they turned it back they didn't turn any airspace back with it.

So it is sitting in the middle of a restricted area, and you can only get in and out more or less at the pleasure of the commanding officer of the Marine Corps base, which is some miles away.

Senator ENGLE. Physically, how do they do it? Do they call up the commander and say, "I want to get out of here?"

Mr. KAYNE. Senator Engle, this is a gray area, and I do not believe it has been entirely clarified at this point. The FAA may have some

information on it, or the CAB, with regard to the actual advice. But our understanding of this, from the information we could obtain from local pilots and other organizations, was that if you wanted to fly in that area you made an individual agreement with the commanding officer of the Cherry Point base for your particular flight. For the people who operated civil aircraft from that airport on a regular basis—and there were some commercial activities there, fish spotters, and so on—this was a fish spotting activity wherein the collision occurred—that he gave these people more or less, as we understand it, an informal OK to fly at certain altitudes, and in certain directions away from the civil airport.

This apparently grew, as we understand it, into more or less of a continuing permission, you might say, for this type of operation so that the pilot did not have to obtain individual authority for each operation, or if one pilot had this authority or this permission other pilots could follow the same pattern and the same altitudes.

It was this type of a loose operation that was going on, but it was subject at any time to the dictates of the military commander.

We have not yet to our satisfaction been able to find out just exactly what type of operation was going on with regard to the aircraft that was involved in the accident. As far as we know, he was operating under a general agreement, or understanding, that a number of the pilots had that they could operate at certain altitudes in certain quadrants or sectors away from the civil base.

Senator MONRONEY. How far is this airport from the Cherry Point Airport?

Mr. ARMSTRONG. I would say about 15 to 18 miles, as I recall it, roughly, sir.

Senator MONRONEY. It has a control tower?

Mr. KAYNE. Cherry Point has a control tower, sir, but the civil airport does not.

Senator MONRONEY. In other words, you couldn't run traffic at both airports off one control tower?

Mr. KAYNE. No, sir.

Senator ENGLE. That is all, I think, except, I want to say I heartily approve of the position you take with reference to the speed limit, the increasing of the ceiling from 700 to 1,500 feet, and your comments with reference to tall structures.

Thank you very much, Mr. Chairman.

Senator MONRONEY. One thing on the speed limit, and on the conflicting traffic on handling and take-offs. I believe you made a very important point in your previous testimony that many times if the airports would give to general aviation a shorter and a lighter runway on the side of the field, that would eliminate a lot of this conflict—that you come in under a different approach, and you would be out of the way of the high speed aircraft. Is that not correct?

Mr. HARTRANFT. That is correct, sir.

Senator MONRONEY. I know Tulsa uses that all the time. We have a north-south runway which is generally longer than a mile, and the jets use that one, so you are never in the pattern hardly of the high performance jets.

Senator ENGLE. I just wanted to add that I hope some very definite effort is made in the construction of these new airports where Federal

money goes in, that some kind of an arrangement be set us so that we can get on these smaller, shorter strips.

On the old ones, like out here at National, it would be pretty hard to do. But at Dulles we should fix it up so you can get in there without tangling up in the same traffic pattern with these big airplanes. The speeds are different. I went up in the Washington tower not so long ago—in the control center—where they operate their radar. I was asking them how they maintained separation. They know the characteristics of these airplanes. That is how. Sometimes they will allow a fellow 3 miles, and by the time one airplane is on or coming over the fence, so to speak, the fast airplane behind him has closed the gap to 1 mile. But when you get an airplane in that traffic pattern that throws the whole thing out of gear, of course they have trouble with it. Further than that, they were reluctant to let us in. They deny that, but I know they are reluctant to let us in, whereas if we could get in on our own on a different pattern, the boys running the control towers would feel a lot more comfortable about it.

I certainly endorse that suggestion, and I hope it is implemented in the next Federal Airport Act.

Senator MONRONEY. It is included in the Federal Airport Act. You can build whatever runways the municipality recommends generally within their matching limits. But has there ever been a conference of airport operators and others to try to upgrade this as a sort of a major feature of certain airports, to have this extra civilian runway for general aviation?

Mr. KAYNE. Mr. Chairman, to my knowledge—and I may have overlooked something, but we do follow most of this fairly closely—we made this recommendation last October, we being AOPA, at the annual convention or conference of the National Association of State Aviation Officials in San Francisco.

We did make the same recommendation there because it is fast becoming apparent that our airports, the smaller airports, are disappearing at an alarming rate. This seems to be one solution to the problem.

Senator MONRONEY. We had it when we had the Federal Airport Act up. Unfortunately, it was cut down to midget size. We had to accept it. We hope we will have a new one coming up the next administration.

Mr. HARTRANFT. A quick word before you pound the gavel, Mr. Chairman.

It would help tremendously if the FAA would write that out in their specifications because a community normally will follow the recommendation of the FAA airport engineer.

Senator MONRONEY. Thank you very much.

We will hear Mr. Lawton immediately after we reassemble for answering this quorum call. The committee will stand in recess for about 15 minutes.

(There was a short recess taken.)

Senator MONRONEY. The Subcommittee on Aviation will resume.

We are honored to have Mr. William Lawton, executive director of the National Business Aircraft Association, back before us.

We appreciate again your appearing before this committee, Mr. Lawton. We will be happy to hear your statement, sir.

## STATEMENT OF WILLIAM K. LAWTON, EXECUTIVE DIRECTOR, NATIONAL BUSINESS AIRCRAFT ASSOCIATION, INC.; ACCOMPANIED BY RICHARD W. GROUX

Mr. LAWTON. Thank you, Mr. Chairman.

On my right, as usual, is my valued staff assistant, Mr. Groux.

We have the usual description of NBAA's policies and activities on the first page here for matters of information of the record.

I have a prepared statement here, Mr. Chairman, which I will commence with subject to your approval.

Mr. Chairman, the opportunity to express our views on airspace management by the Federal Aviation Agency is deeply appreciated.

Airspace problems, the FAA states, fall in two broad classes. The first class consists of rulemaking cases. These relate to the designation or assignment of airspace by a rule, regulation, or order issued by the FAA, and involve, in part, a formal procedure. In second class are nonrulemaking cases. These relate to FAA functions affecting airspace, where it has the authority to make the final decision, but does not express that decision by adopting a rule, regulation, or order.

Also included in these second class are airspace matters on which FAA has an interest, but where it alone does not make the final decision. The second class does not normally involve formal procedures.

Formerly both these types of cases were heard under the jurisdiction of the Air Coordinating Committee, a group composed of Government agencies with aviation interests, and who had a voting power. Industry, with nonvoting power, was also party to these ACC proceedings.

That the ACC, committee-with-vote, procedure had in some cases deleterious effects on the management of airspace are obvious and cannot be condoned.

During the course of the hearings on the Federal Aviation Agency Act I believe that witnesses from both Government and industry were in general accord that the ACC committee-with-vote procedures would provide an unworkable system to impose on the proposed new agency if we were to modernize our airspace system.

Accordingly, Government and industry joined in one voice to place the management of airspace in the hands of one agency, the FAA.

Early in 1959 it became apparent that the FAA was going through a thorough examination of the past practices of airspace management proceedings under ACC. It became apparent that, with the appointment of a Chief of the Airspace Utilization Division, firm guidance had been afforded him from higher FAA authority to set up a new procedural system for handling what are commonly referred to as airspace cases.

In our association's contacts with the Air Space Utilization Division it also became apparent, to us at least, that the development of this procedural system was to be conducted without discussion with any industry group. And I must state at this time that this apparent order from on high was most scrupulously observed by the Chief of the Air Space Utilization Division.

When the FAA, after 3 months of internal coordination, came out with their first proposal on how they intended to handle airspace proceedings it was at once obvious that they placed full reliance on the terms of the Administrative Procedure Act for the conduct of their business.

It was also obvious, from reading these FAA-proposed rules, that the written comments and suggestions made by the various civil aviation organizations were, for the greater part, ignored.

And as the organizational structure of the Airspace Utilization Division progressed, it was also evident that the former CAA personnel who had great experience in handling airspace cases were being diverted into other branches of the FAA.

On April 24, 1959, the FAA Administrator in a letter addressed to our association announced that activities of the Air Coordinating Committee on rulemaking airspace cases would cease; that the FAA would take over the full performance of the airspace responsibilities; and that this FAA function would commence upon publication of their revisions to part 409 pertaining to "Procedures and Rules for Airspace Assignment and Utilization" in the Federal Register.

A review of the proposed revisions to part 409 clearly indicated that the FAA had no provision made for the users of the airspace, whether they be representative of military, air carrier, business, or general aviation, to provide information to the FAA prior to their writing of a notice of proposed rulemaking.

On May 19, 1959, the following letter was addressed to Mr. Quesada by NBAA. Because it outlines a problem which still exists in great part, I will read it in its entirety.

MY DEAR MR. QUESADA: In consideration of the processes involved with the FAA's jurisdiction over airspace, may we offer the following comments for your thoughtful evaluation.

This association has, during the past year, been able to provide representation at the regional airspace subcommittees.

Our representatives have had advanced notice of each airspace case to be heard. The cases have been documented, have been charted on maps, have given basic reasons for the need for the case to be considered, and have—because of the advanced notice—given our representatives the opportunity to go into the field to determine user response.

These representatives have appeared at each of the regional subcommittee meetings, often traveling several hundreds of miles to contribute their knowledge and their findings to the consideration of each airspace case.

It is not, as you must realize, easy to secure experienced, knowledgeable representatives who have the time [1 day per month at meetings, 5 days per month in preparation] to participate in these important meetings.

These regional meetings have provided a facile medium for the exchange of information among civilian user groups, governmental agencies, military user groups, and other interested parties.

Conflicting claims and/or misunderstandings between user groups have, in the great majority of past cases, been resolved through rapid verbal interchange across the committee table, followed, when needed, by official statements of position.

In many cases the user's knowledge and experience has proven value to the aviation agency in providing an alternate solution to a problem. No one user group, civil, or military, no one aviation agency, FAA or CAB, is all knowing. Each has learned, in the past, from the other. From these interchanges of information we have been able to resolve many questions with rapidity and with the least sacrifice by either user or controlling agency.

The regional subcommittee operation has proven itself valuable in the past. Under the leadership of FAA it can continue to handle rulemaking and nonrule-

making airspace cases rapidly, efficiently, and with knowledge contributed by all user organizations.

If nonrulemaking cases are to be temporarily handled under Air Coordinating Committee jurisdiction, there is still the way open for FAA to continue the meeting on rulemaking cases under FAA chairmanship.

We have a proven method of handling these cases, through regional and Washington level meetings. Whether the representative grouping is a "committee," an "advisory group," or whatever name is chosen, the value of such an aeronautical knowledge input has proven its value.

Realizing that neither the Administrator nor the FAA can be bound by committee decisions, we respectfully submit that no decisions will be offered by the regional or Washington committees. However, we will have the assurance that whatever the Administrator's decision may be, that he has made the decision with full knowledge, quickly and accurately gained, and with the minimum work burden on either the Agency or upon those upon whom the Agency must depend for detailed knowledge.

The routine of Federal Register publication of proposed cases, even when backed by additional direct mailing to user organizations, the subsequent detailed case examination, plotting of maps, field evaluation, analysis, and case-answering correspondence, places an undue physical and financial burden on the airspace users and on the FAA personnel charged with the program.

We must also call to your attention that many of the general aviation organizations who have been regularly participating in the regional and Washington airspace committee work, have done so at the direct invitation of the former CAA Administrator, who, on February 26, 1958, in commenting on the functioning of the airspace components of the ACC, said:

"This did not always result in industry being adequately represented because its views in most instances were presented by CAA and sometimes not with the vigor and enthusiasm that industry would have liked. Under our new procedure, aviation interests will be afforded an opportunity to present and justify their own views on their own merits and on an equal footing with all other users on each problem involving special use of the airspace."

We do not believe that the present proposals for handling airspace cases as outlined in part 409 permit the valuable and timesaving methods previously accomplished under regional and Washington meetings that were on a scheduled basis and which permitted full-exploration hearings.

Your consideration of the continuance of the regional and Washington level subcommittee and committee hearings under FAA chairmanship is requested.

Cordially,

(Signed) WILLIAM K. LAWTON, *Executive Director.*

NBAA was not alone in its concern over the proposals made by the Administrator.

On May 25 eight civil aviation organizations, representing the broad scope of all civil aviation, addressed a jointly signed letter to the Administrator.

Again it was pointed out to the Administrator that the provisions of the revised part 409 did not permit the necessary, and proven, methods of obtaining complete information from those who would be affected by airspace regulations.

The organizations made the following recommendations:

1. That the FAA establish a national advisory conference in Washington, D.C., and that subcommittees of this conference be established in the various FAA regions.

2. That the conference and subcommittees be composed of representatives of all user groups and interested parties desiring to participate.

3. That the conference and subcommittees meet regularly for the consideration of airspace and matters related thereto in which the participants have an interest.

4. That the staff organization and facilities now existing at FAA regional and Washington levels for handling airspace matters should be modified as necessary to serve this advisory conference under FAA chairmanship.

On June 24 the user organizations met with FAA officials and presented their proposals, which would permit, based on their knowledge and from their experience, a more realistic and workable set of procedures.

At this meeting Mr. Daggett Howard, General Counsel of the FAA, was asked for his opinion as to the legality of these proposals made by industry. His immediate response was that they were fully within the framework of the Administrative Procedure Act and that they did not conflict with the authority of the Administrator.

On July 20, Mr. D. D. Thomas, Director of the Bureau of Air Traffic Management for FAA, in a letter addressed to our organization, wrote us to the effect that:

> Our meeting with representatives of the association and other airspace users on June 24, 1959, was particularly helpful in exploring the matter to the mutual benefit of all concerned. We hope that we did make it clear that the Federal Aviation Agency does not intend to limit its working relationships with industry in airspace matters to the formal rulemaking procedures of part 409 of the regulations of the Administrator. To the contrary, we will encourage discussions with all elements of airspace users where effective contribution would be realized by this action.

This statement by Mr. Thomas, and the subsequent modifications and revisions of their previously planned procedures, was the first indication received from any person in the FAA that industry had in the past been of value as a source of information which would enable the FAA to write a notice of proposed rulemaking based upon user knowledge.

At the present moment, although the industry proposal has been placed into some degree of activity, the participation by user organizations in the airspace rulemaking procedures is not satisfactory.

Previous testimony by the representatives of the air carriers has clearly indicated this fact. I am certain that other user organizations will also comment on these unsatisfactory airspace procedures.

Mr. Quesada has, in previous testimony before this committee, made a statement concerning the rulemaking procedures and policies he has set as a standard for the FAA. It is a statement which, I believe, all in aviation and elsewhere most heartily endorse.

"No special group," Mr. Quesada stated, "can be permitted to hold the pen that writes the rules."

All that this segment of industry asks, we most respectfully present to the Congress, and again to the Administrator, is that the FAA pen that writes the rules dip that pen deeply and at frequent intervals into the vast inkwell of experience, knowledge, and information that all user organizations can offer to the Administrator.

The Administrator's views, as expressed before this subcommittee on January 11 of this year, regarding special interest groups, indicates, we believe, a lack of understanding that is regrettable. The Administrator stated:

> Although I am sure this is an old story in the personal experience of the members of this committee, this might well be a good time to speak generally on the problems of pressures from special interest groups who feel that no regulation should be adopted unless it is completely satisfactory to them.

While the Administrator may presume to speak for the policies of other organizations, may I assure this subcommittee and the FAA Administrator that this is not and never has been the feeling of the National Business Aircraft Association.

No regulation can ever be completely satisfactory to all groups. With the possible exception of the Ten Commandments, I do not believe that any set of rules, regulations, statutes, codes, or legislation is completely satisfactory to all groups.

For the Administrator to label "special interest pressure groups" in aviation as being particularly susceptible to this human state of affairs does not seem in keeping with his other please for cooperation and understanding.

We feel, as we have indicated in our testimony today, that the Administrator, the industry, and the general public will be best served, that rules and regulations will be satisfactorily promulgated, only when the Administrator takes the full step forward and permits information based on experience and knowledge to be presented to his Agency before a notice of proposed rulemaking is ever considered for publication in the Federal Register.

Only through this prior coordination on a roundtable basis and in the presence of FAA will industry be able to quickly, freely, and intelligently know the impact of the rulemaking proposals on other segments of industry. Only through prior coordination will the problems of terminology be clarified. Only through prior coordination will the FAA, with comprehensive knowledge at its disposal, be able to present proposals for rulemaking that do not inadvertently create serious problems to one segment of the users of the airspace.

At the present time, and for the past 5 months, the FAA has been grinding out notices of proposed rulemaking at the rate of some 35 cases a week. Examination of the docket section reveals that little or no comment has been received by the FAA on the majority of the cases. This does not signify that the user organizations, and I include the Military Establishment in this category, have accepted all these proposals as valid and hence have made no comment. I submit that this serves as positive indication that the volume and complexity of the airspace cases has prevented user organizations from making comment.

What airways system will result from this avalanche of rules may be known to the FAA but I seriously doubt that any civil or military organization has the complete picture laid before them.

The FAA has cited their accomplishments in the field of airspace management. Some of these, particularly in the area of reduction of military controlled airspace, have been long needed and are welcomed.

To place a blanket indictment on the activities of airspace management of FAA would be most unfair to the extremely hard working men and women who are acting under firm directives of the Administrator. We believe that the Administrator's appeal to the "special interest pressure groups" to cooperate with the Agency and with the conscientious FAA Airspace Utilization Division can be made possible if the Administrator would allow them to cooperate.

Thank you.

Senator MONRONEY. Thank you, Mr. Lawton.

I asked Mr. Hartranft if he would supply us with some examples of three or four types of rules that were either dangerous to safety or to

the economic operations that have been taken through without proper industry consultation. I wonder if you have any of those in mind you could give us now or would you like to supply them for the record?

In other words, we have heard a good deal of testimony about it. I think the committee would be interested to know just what these obnoxious rules were, and how they affected deleteriously the interests of various branches of aviation.

Mr. LAWTON. Senator, these rulemaking cases, we must be sure we understand. These involve the alinement of airways, for example. They involve the designation of control areas. When these come out in the present form they are listed by a place name and a series of geographical coordinates laid out in latitude and longitude.

Because of the irregularity of these control area spaces it takes on an average in one case for a man to plot these on a map at least 30 to 50 minutes. When this is done it is then applied to see how this will affect the local aircraft operations.

The same holds true for the realinement of an airway. They will give you a change, saying "The airway will now extend on this radio, from this omni, instead of previously operated." This requires again extensive charting and plotting, and then finding out how it affects the users, both those based at airports nearby and those who desire to transit the area.

We have one case I am reminded of now that may serve as an indication of the fallibility of our current system, in which the FAA had proposed to locate a navigational vortex system in some, I believe, 16 miles south of an airport at Rhinelander, Wis. This information was sent out to our people in the region. They immediately came back and said "Here is an airport that has no instrument approach facility. Why cannot this en route aid, which can also serve as an airport instrument approach aid, be located closer to the airport? This way we can save the Government the price of another additional aid which they will certainly have to put in." This was presented to the FAA, and, as I recall, the response was "This will change the system of the airways structure to such an extent it is not acceptable, and, further, we believe that the location that you propose is not suitable as a site for this radio aid because of the nature of the terrain which will affect the propagation of the radio waves."

Later examination in the field had the FAA go back to the site. They sent their engineers out there, and they field tested the site. The net result was that the radio aid is now there.

This took a little doing on our part, but it saved the Government about $75,000.

Senator MONRONEY. Doesn't this indicate that what you do say is rather important in this rulemaking, and that you were able to get your point across, and you did have it reinvestigated, and you did get it located where you said it should be?

Mr. LAWTON. Senator, this was one case that we were able to handle out of 35 that week. What happened on the other 34 I can only guess at. But this was one that we had some knowledge about right in our own shop. This is what is going on by and large throughout the industry. They are not able to handle the volume of cases as they are presented. We are not permitted a chance to go and give Government the knowledge which Mr. Quesada so earnestly pleads

for. He says he wants us to cooperate. But where we offer to cooperate it has to be under his terms and under his regulations, and this, we submit, is entirely and grossly unfair to the industry, to the general public, and also in the final analysis to the FAA.

Senator MONRONEY. I am very much interested, as I have expressed myself during the hearings, in trying to prevent FAA from moving ahead in areas where there is a high degree of controversy, and where the resultant action is deleterious to the airspace users.

I am interested in the cases. We have had a year of this—almost a year of it. I would like to have some examples that you have in mind of where this failure to have 35 hearings a week, which would tie up a lot of Government personnel, as well as industry personnel, on some things that may be rather simple, have had adverse effect.

What I am trying to find out is why are these rules so bad which have been passed?

I think it would be very helpful to the record to have those in it.

Mr. LAWTON. One of the reasons, Senator, the industry at large hasn't been able to decide how good or how bad these are is the fact that most of these things have not actually been implemented.

If the record should be examined, other witnesses have pointed out that under the ACC procedure more than 3,000 cases were handled in 1 year. Yet I submit by the FAA's own records they have not even got 20 percent of that work done.

Senator MONRONEY. That is right. Mr. Lawton, bear in mind that the ACC might have handled 3,100 cases, but they didn't handle the big cases. It was so rotten that the Congress moved to withdraw the power and even write a section in the law that the President could not establish an Executive Committee that could override or supersede the Administrator's decision.

Mr. LAWTON. Senator, if we can please get this one point across, we have failed to do this apparently with FAA. We hope that we will not fail with you, sir.

The ACC procedure, which entailed voting, everyone in industry thoroughly condemns. We want no part of a voting procedure. We have also unanimously said we do not want to bind the Administrator's effectiveness in airspace management. We have not made any suggestion on this matter, although I will admit after listening to the general's testimony this morning you might well believe we are trying to saddle him with this thing.

I think this was a very sorry performance on the general's part to insinuate such a thing, although in cold type the insinuation doesn't appear. But it was obvious from the questions being asked by you, sir, that you received the impression that industry was trying to saddle the FAA with the complete ACC procedures.

All we are asking is that the Administrator have a system whereby he and his staff can receive knowledge before they write a notice of proposed rulemaking. We feel certain that in the vast majority of cases, that with this intelligence at his disposal, that the notice of proposed rulemaking will be clean, that there will be no necessity or any volume of work entailed afterward.

This is all we make the plea for, is for this simple basic democratic procedure of placing knowledge before a Government agency. The FAA has repeatedly in one form or another tried to subvert our inten-

tions before you, sir, and in public statements that we are trying to subvert the agency act and the powers of the Administrator. This is not so, and if I can make it any more declarative, I will try to do so. But this is the issue we are faced with.

Senator MONRONEY. I know what the rulemaking processes are in the safety field that are objected to, and the reasons why by various aviation organizations. I know generally on the pilot certification field. But I am interested in knowing why and what cases stand up after the experience of a year where the rules they have passed on or proposed are so violently opposed, as we find here, by three great aviation organizations.

Mr. LAWTON. Sir, I would have to recall this from memory. I cannot cite you the actual site, but this is an example of the thing that is going on. This does not only involve air safety. There is another great field which we all admit is secondary to safety. This is the economic hazard and penalty placed upon the user.

For example, the FAA has at one time proposed a change in an airway which involved the extension of that airway by making a certain course. It made it 4 miles longer than it had been previously. This to the average person seems insignificant—4 miles.

Let us take a look at this. I will have to present this from the air carrier's standpoint. Four miles. Let us assume that this means 1 minute in an aircraft's time taking this extra 4 miles. This happened to be on a fairly busy route. Let us assume, for example, that there were 60 scheduled flights a day across this area. This means 60 additional minutes would be flown by the air carriers at 240 miles an hour. The aircraft costs of operation vary between $300 and $700 an hour. Let us split the difference. Call it $500 a day additional penalty to the air carriers.

You multiply $500 by 365 days in the year and in one case you have a sizable economic penalty placed upon the air carriers alone.

The other itinerant flights, of course, also suffer the penalty.

If this type of a thing continues, 4 miles in one section for the convenience of the FAA, 3 miles in another area for the convenience of FAA, 7 miles in another area, one at a time, a nibble here, a change there, you are coming out with an economic penalty that is intolerable to the air carriers, and highly penalizes the private operator.

This is the type of a thing that is going on right today.

Senator ENGLE. Talking about an illustration of the sort of thing the complaint is about, I would refer to Mr. Kayne's letter addressed to the Federal Aviation Agency on December 18, 1959. I realize it is hard to pick these up in your memory, but here he went right down through a great many of these—preamble 5–9–15 with reference to the operation of high performance jet aircraft as a primary requisite for the promulgation of the proposed civil air regulations and relating specifically to, I believe, the Los Angeles Airport, and saying that they had a proposed rule, for instance, that they could only take off eastbound between certain hours of the night.

Here is one that would require permission from air traffic control to transit the area below 2,000 feet. They point out how this thing can get all tangled up. There is a requirement for a written report from the pilot in each instance where a runway other than the preferential runway is used, applicable to general aircraft.

The establishment, for instance, of a special helicopter pattern entry at Los Angeles. The requirement that light aircraft departing Los Angeles follow a preferential routing. Here is one from Hawthorne requiring a straight-ahead climb of 600 feet. They set up these special rules for each one of these airports.

Here is one, the pattern for Hughes Airport, which has the same conflict for departing aircraft when runway 7R and 7L are in use at Los Angeles Airport. In other words, they sit down and they write up 35 different regulations that apply to a particular airport, say in the Los Angeles area. They are all muddled up. They don't know what they are talking about. They don't fly the area. They don't give anybody a chance to be heard, including the people who go in and out of the place.

So out comes a blizzard of regulations, and a fellow has to carry not only a separate manual with him for every airport, but a bookkeeper and a secretary to go down through it to see if he is in violation.

The other day I went into the Los Angeles Airport, and I was astonished. We got hold of the air traffic control finally. We contacted the tower first. They said, "Get on approach control." So we go on that and after we fussed around for a while. They said, "You go out and hold over the city hall."

The captain who was with me didn't know where the city hall was, but I did. He said he would give us a clearing at 5:10. So at 5:10 they said, "Now, you go down and get over the Coliseum." He didn't know where the Coliseum was, but I did. We went down there and finally we got squared around, and we got in behind a big old Electra prop job, and they said, "Report when you are abeam of the Hollywood Track." He didn't know where the Hollywood outfit was. I did. We gave them all those reports.

But if a fellow was flying an ordinary radio facilities chart he couldn't follow that kind of instruction. If he went into Pittsburgh, and they told me to get over the city hall, I wouldn't know where to get. So you have to have a sectional map, and probably a local blowup, in order to be able to sit there and tell what the blazes you are doing.

It just illustrates the point made by Mr. Kayne in his statement here in the letter submitted to Mr. Quesada, or whoever it was, that you can't write a special set of rules for each one; and they come out with this blizzard of proposed rules. This one just referred to is a fine indication of what they are talking about.

You could get 35 different rule proposals with reference to specific traffic patterns in the Los Angeles area, and a fellow would have to carry some kind of a book with the most meticulous sort of indexing in order to know what you are doing.

Let us assume you are flying out of Pittsburgh to Los Angeles, and you come in. There ought to be fairly uniform procedures so you know what you are doing. At least when they tell you where to hold, they ought to give you a fix that you can determine by radio procedures, and not by looking out of the cockpit and trying to find the Los Angeles City Hall.

But this is the sort of thing, Mr. Chairman, that I think the witness is referring to. There are 35 different proposed rule changes, and all of them, any one of those, can get you into an air traffic violation.

This is a sad thing about it. No wonder the private pilot and the business pilot shakes with trepidation when he starts flying around the country. These airline pilots work these routes every day. They live with them. They know.

Before they undertake to fly them commercial they have route familiarization training. So they become familiar with each one of those routes. Then they are apprised of what it is.

But what about the poor fellow trying to fly into Los Angeles without a bookkeeper, a secretary, a library, and an index, and a copilot to fly while he looks at it all?

Senator MONRONEY. How does it square, then, with the fact that these witnesses approve highly of the 3,100 changes that were made by the old Air Coordinating Committee, and they find it difficult to assimilate the confusion of 217——

Mr. LAWTON. May I answer that?

Senator MONRONEY. Yes.

Mr. LAWTON. That is because under the ACC system these cases were sent to us in advance, and gave us time to look them over, and to find out how they would affect us. Under this system we cannot do this. This is the basic difference that we are trying to emphasize to you, sir, and hope because of the unanimous opinion of all segments of industry that the proper direction will be given to the Administrator to afford this opportunity for the cooperation that he desires to be actually afforded to him.

Senator MONRONEY. Then do I understand that in these 3,100 cases that were settled, it meant that many of those were dropped, and that there were fewer to assimilate under the old system than now?

Mr. LAWTON. Senator, when you review what happened under the ACC method of notifying people in advance, you will find that about 85 or 90 percent of these cases were rubberstamped by the users. We saw them, we evaluated them. We saw they were just and needed, and they were put into effect immediately.

There was no hesitation on that part. But when there came a cog in one of these things, that even the CAA didn't recognize that there was trouble ahead, then we had the chance to explore this. We find out that where we may have been in favor of a certain thing, or seemed acceptable to us, that other people found that it was not, and jeopardized or caused a serious hazard to them.

Then through the interchange of knowledgeable information, between the user organizations, and in the presence of CAA, we could find out how the net aim of the CAA could be gained. This way, this is not being done. They are operating without the knowledge that they need.

Senator MONRONEY. In your testimony I believe yesterday on air traffic control you were advocating shortcuts; in other words, to avoid the detours around these various airways and things. If we remodel these airways, with which I am quite in agreement, does this mean that every city airport would have to be heard as to protests against being dropped off of the airways?

Mr. LAWTON. Senator, under the rather futuristic suggestion that I made, there would be no airways. There would be traffic concentrations because of the normal traffic between major centers. But you would not be required to confine your flight to this narrow channel.

You would get to your destination, but you could proceed there on the route of your own choosing and still be afforded separation by the traffic control system. This would apply whether you were a private pilot flying without an instrument license, or whether you were the most qualified airline pilot with all the tickets. You would be afforded the safety of protection, but you would be able to choose your own route.

Senator MONRONEY. Do you have any further questions?

Senator ENGLE. No, except I say to Mr. Lawton that he appears to support the view of the other pressure groups that have been in here with respect to these regulations. That is, you want a fair chance to see that FAA has the facts before they proceed to put a regulation into effect. Not only that, but that you have a chance as one of the user groups to place some evaluation on the necessity of it with reference to the safety factor that it will produce.

We can burden this aviation business down to the point where it simply becomes uneconomic to fool with it. I say now that in addition to everything else you have to have, your landing charts, your radio facility charts, your sectional charts, your blowup of the city of Los Angeles, now we take with us a tourist guide to the city of Los Angeles because I couldn't find the colleseum, the city hall, or Hollywood Park on either the sectional or anything else.

The rulemaking procedure can be carried to the point where aviation as a general proposition doesn't become an economic method of transportation. It just gets beyond the capability of anybody to do it, and to stay within these rules.

I hope Mr. Quesada will read these things, and not arrogate to himself the function of being the sole fellow who has any regard for safety in aviation. It is my firm belief that the fellows who ride up in the front end of those airplanes, whether commercial airplanes, the private pilot, or the business pilot, have a No. 1 interest in safety, because they are usually the first ones killed when those airplanes run into something.

But for General Quesada to arrogate to himself a posture which seems to preclude anybody else from having any legitimate interest in air safety, or any true interest in it, is in my opinion a completely unwarranted attitude. It is one that ought to be revised.

Senator MONRONEY. I do not agree that General Quesada has arrogated to himself the sole interest in our safety. You are entitled to your opinion, and I am entitled to mine. I think he has given credit to all of the capable and competent services, and has mentioned it numerous times here. I think he does have a responsibility, charged under the law which Congress passed, to work with all the groups in aviation. I think he is trying his dead level best, as are the other branches of aviation, to bring about the safest possible management of the airways which under the law were placed in his lap to try to straighten out.

Certainly there have been many phases of our problem that have been straightened out by the cooperation of all branches, including the military. I don't think anybody can claim credit for all safety or to deny that anybody else is making their ultimate contributions to the fullest extent. But I do not agree with my colleague that he is trying to arrogate to himself this sole function.

Senator ENGLE. Let me add this, that General Quesada has taken an attitude toward those people primarily interested in aviation which in my view is wholly unjustified, and he has arrogated to himself a holier than thou attitude about the public safety that isn't justified by any act passed by the Congress of the United States.

I make the prediction that if he doesn't stop it things are going to get worse rather than better.

Senator MONRONEY. The committee will stand in recess until a week from next Monday, when we will take up the air cargo bill. We intend to resume the hearings on the review of the FAA on February 15. We stand in recess.

(Whereupon, at 4:22 p.m., the subcommittee adjourned.)

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